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TEST PROBLEMS
IN
COST ACCOUNTING
AND
FACTORY ORGANISATION

(WITH FULL SOLUTIONS)

BY

JAMSHED R. BATLIBOI, F.C.A., F.I.C.W.A.

SECOND EDITION

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PREFACE TO THE SECOND EDITION

While preparing the Second Edition of this work, the opportunity has been availed of in thoroughly revising and enlarging it. Many Problems in Theory and Practice of Cost Accounting & Factory Organisation have been added, in order to make it a comprehensive work. The entire work including the Index has received the personal attention of the author.

The subject of Internal Organisation has been most carefully and xhaustively dealt with throughout, as it most vitally affects the effective working of any system of Cost Accounting.

The Publishers will feel obliged, if they are informed of any inaccuracies that may have inadvertently crept in.

10th February 1958.
National Insurance Building,
204, Dr. Dadabhoy Naorojee Road,
Fort, Bombay.

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PREFACE TO THE FIRST EDITION

The present text has been written entirely in the form of Questions and Answers to serve as a systematic and comprehensive course of tudies in Cost Accounting, as experience has proved beyond doubt that a technical subject of this nature can thus be more readily grasped than when presented in shape of an ordinary text-book. It is further designed to provide a supplementary course of training for those who have perused and studied my " Works Organisation, Management & Cost Control ".

The questions on theory cover the entire range of the subject, and every conceivable point likely to occasion doubt or difficulty to students has been most exhaustively and lucidly dealt with. The practical appli cation of the subject in shape of problems, with which students and examinees are usually confronted, has received equal attention, and the practical problems have been selected, arranged and graded with great care and labour.

Whereas a serious study of the answers to theoretical questions will serve the student as an invaluable aid in expressing his knowledge in a clear-cut and appropriate language, a systematic course in the solution of practical problems will prove most effective in acquiring accuracy, speed and confidence, which are so very essential to success in examinations. Every endeavour has been made to bring this work on a level with the stringent requirements of the examinations on the subject, and I have no doubt that a close and careful study of the subject-matter herein will enable the student to confidently face any test, however rigid it may be.

It need hardly be stressed that a sound system of Cost Accounting is closely inter-related to problems of factory equipment and lay-out production planning, efficient buying and storing of materials, wage systems, expense control, plant maintenance, internal transport and tool service, as also a careful interlocking and supervision of the vast and varied activities of the works, and evidently, therefore, questions on these aspects of Factory Organisation have also been embodied in the text.

I must express my deep indebtedness and thanks to my partner Mr. B. D. Birdy, B.Com., G.D.A., R.A., and my friends Messrs. M. J. Gyara, B.A., R.A. and M. N. Gandhi, G.D.A., R.A., for their highly valuable assistance in the compilation of this work.

I have now to ask for the kind indulgence of those for whom this work is intended, and shall deem it a favour to be informed of any inaccuracies that may have inadvertently escaped notice.

21st January 1949.
National Insurance Building,
Hornby Road, Bombay.

JAMSHED R. BATLIBOI

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TEST PROBLEMS IN COST ACCOUNTING AND FACTORY ORGANISATION

CHAPTER I

THE NEED AND VALUE OF COST ACCOUNTING

Q. 1. State briefly the objects and functions of Cost Accounting.

A. The main objects and functions of Cost Accounting may briefly be summed up as under:

(1) To determine the true cost of every product, process or operation, or a group of products on its completion or in its elemental stages;

(2) To secure economy and efficiency in production by controlling all the individual operative activities;

(3) To establish the effectiveness of equipment, personnel and management;

(4) To guide management in the formation of policies, planning and control of all functions;

(5) To measure the efficiency of wage system in use;

(6) To determine variations in costs by constant comparison with costs of similar work done;

(7) To determine profitable activities and economic lots for production;

(8) To provide a reliable basis of analysis for budgetary control;

(9) To provide means for exhaustive analysis and accurate allocation of manufacturing, administrative and sales expenses;

(10) To determine the comparative operative efficiency of each department, and the efficacy of each functional unit;

(11) To detect and help control idle time of men and machines;

(12) To serve as a basis for controlling raw materials, indirect supplies, and tool stores;

(13) To control wage costs of departments and auxiliary functions;

(14) To detect and control all leakages, defective work and wastage in tools and stores;

(15) To enable a close comparison of the financial figures with those as recovered in costs;

(16) To enable a periodical determination of profit or loss without resort to stock-taking;

(17) To provide reliable and comparative data for preparation of estimates; and

(18) To serve as a guide in price-fixing.

Q. 2. What are the essentials for a sound system of Costing?

A. The following conditions are absolutely essential for a good system of Costing:

(1) The system must fit in with the requirements of the business;

(2) It must be simple, effective and sufficiently elastic so as to admit of easy adaptation in due accord with the changing needs of the business;

(3) It must enable an easy collection, classification and grouping of expenditure relating to productive and non-productive services as well as of general oncost;

(4) It must give prompt, accurate, reliable and comprehensive costs relating to operations, processes and output units in all their constituent elements;

(5) It must admit of easy comparisons with predetermined estimates and with costs of similar jobs previously performed;

(6) It must present reliable data in sufficient details to enable future estimates to be prepared and the sale prices to be fixed with due regard to fluctuations of expense in any direction;

(7) It must provide for the maintenance of cost records and statistical data, in a well-arranged, classified and analytical form, of all manufacturing and other expenses so as to serve for future reference and guidance ; and

(8) The system should not be unduly expensive and cumbersome.

Q. 3. Describe briefly the functions of sound Works Organisation.

A. A system of sound organisation must embrace within itself the following:

(*a*) Formulation of a sound financial and commercial policy for the business;

(*b*) Efficient planning and lay-out of works building and plant equipment;

(*c*) Rational division and distribution of work, and devolution of authority and responsibility;

(*d*) Grouping and correlating the activities of the various units of the human and mechanical forces of the enterprise;

(*e*) Effective and economical conduct of productive and non-productive operations;

(*f*) A system of strict control and supervision on purchases of raw materials, stores and tools, as also on the work done and the wages paid, so that each lb. of raw material and each hour of labour should be traceable, in order to eliminate all possible leakage and waste, and thus secure high efficiency and economy in management;

(*g*) Co-ordination of the diverse activities consisting of simplification and standardisation of products, routeing of production flow, inspection and supervision, budgeting, cost control, sales projects and economic management;

(*h*) Establishment of a system of periodical examination and study of the reports, returns, charts and statistical data received from the different sections, to enable those in management to grasp the realities of the situation, from time to time;

(*i*) A highly efficient system of Financial Accounts as would bring in close and constant scrutiny and control all the numerous and varied works expenses and establishment charges so as to keep the expense burden at the lowest possible percentage of the cost of output;

(*j*) A most careful grouping and classification of all the materials consumed and the wages spent as well as the works and administrative expenses as would tend towards easy ascertainment of true costs;

(*k*) A proper linking of the organisation with a suitable costing method so that the numerous factors of production would be systematically localised and apportioned, and the efficacy of each productive and non-productive service would be tested; and

(*l*) Lastly, an earnest endeavour on the part of the administration to inculcate feelings of goodwill and confidence in the good intentions of the management amongst all employees by creating and maintaining conditions as would result in team-spirit and willing efforts on the part of all.

Q. 4. Discuss fully the statement that accurate and economic Costs are closely interlinked with sound Factory Organisation.

A. Factory Efficiency and Costing may be said to be indissolubly linked one with the other. Whereas, on the one hand, it is impossible to imagine a highly organised factory without a suitable system of Costing, it is equally futile, on the other, to expect any system of Cost Accounting to give reliable results unless it is supported by sound internal organisation.

With a manufacturing concern, before the commodity emerges as a finished and saleable product, so many diverse factors enter into its cost of production by way of raw materials and stores consumed, productive and non-productive labour, factory expenses, works organisation and management costs, as also the selling, distribution and office administration charges, that it becomes a matter of considerable difficulty to arrive at the true cost of products. It is here that a sound system of Factory Organisation becomes indispensable for securing high efficiency in the ascertainment of accurate final costs. Under a suitable costing method supported by highly efficient organisation, the numerous factors of production are systematically localised and apportioned, and waste of material as also payments of unremunerative labour and expense, if any, are brought to light.

Ascertainment of accurate costs is thus directly related to factory efficiency and stability. A manufacturer who has equipped himself with a sound system of Cost Accounts knows exactly what part of his business is profitable and what part is not, so that he is able to direct his energies in more profitable channels leaving unprofitable work to others. He is able to make any adjustment of prices which may seem desirable under stress of competition with the full knowledge of what the result of that adjustment will be.

To facilitate the proper charging of direct materials and direct wages to jobs, the works routine must first be very carefully thought out and organised. It would equally be necessary to plan a method of record and a system of internal check on the incomings and outgoings of material and consumable stores as also on the large sums paid out weekly or monthly in respect of direct and indirect labour. Similarly, the whole of the works and establishment expenses must be most accurately brought into record and grouped so as to admit of their easy classification and sub-division for the purpose of distribution over the appropriate jobs, processes or other cost units, in order to arrive at their respective production and total costs. As the fundamental object of Cost Accounting is to arrive at the accurate costs of the products, it is highly necessary to see that each product, process or unit gets a fair portion not only of the direct material and labour involved, but also of the expense burden attributable thereto.

Economy of operation must depend on the supply of raw materials, fuel or power at favourable rates, an adequate local supply of efficient labour, the nature and cheapness of transport facilities, and the proximity of markets. All these factors, therefore, need to be most critically examined before selection of a site for manufacturing purposes.

The Planning Department must determine the machinery and plant necessary for producing a good output at low costs and must see to the most efficient lay-out of the machinery by a proper disposition of the processes and machines, with due regard to the nature of the industry and with ample provision for future expansion.

The Design Department must design the products to best advantage, and ascertain the most up-to-date and economical methods of manufacture. In view of the fact that the relation of design to cost is of prime importance, simplicity in design should receive most careful consideration, and standardisation should be resorted to wherever possible.

The Progress and Inspection Departments must see that the instructions issued by the Planning Department are being strictly complied with. They would also ensure that the capabilities of all the manufacturing departments and machining operations are utilised to their fullest extent. They would further control departmental progress and internal transport, with a view to efficiency and economy.

As proper selection and economical buying of raw materials must help considerably towards economic production, the Buying Department should be organised on sound lines. All purchases should be effected through authorised channels, and the authority to issue purchase requisitions should be strictly defined and rigidly adhered to. There should be a precise system adopted for checking the receipts of materials and stores, the issues thereout to the different sections of the Works, and the subsequent payments therefor.

A system of critical inspection of the materials purchased to determine how far the quality supplied agrees with the material ordered is highly essential for maintaining the standard quality of every finished product or job, and for locating and preventing leakage or wastage arising from defective work, pilferage or lack of appreciation of the value of by-products. There should be frequent comparison of actual consumption of material in finished products against standard consumption. Such a procedure will at once bring to light any leakage or wastage.

There should also exist a system of Stores Organisation and Control which would always ensure a sufficient quantity of materials and spare parts on hand so as to help towards continuous production without any hitch, and would at the same time prevent any unnecessary locking up of capital. The methodical arrangement and proper handling of stores, the control over the receipts and issues as would prevent waste, pilfering and the accumulation of duplicate and obsolete stores, as also a perpetual inventory system must all form part of a good system of Stores Organisation.

Labour being the most vital element in manufacturing, proper recruitment of the right type of labour must receive careful attention. The working force must be directed and controlled in a manner as would secure most efficient individual as well as total efforts. The system of wage records must ensure that each job or standing order is charged with its correct wage cost. The labour efficiency of the Works will have to be continuously measured at definite intervals by regular comparison of labour cost per unit of production.

The Estimating Department must provide estimates to be filled in tenders or quotations, and unless the work is done on most careful and scientific lines, any under- or over-estimate must result in a loss to the concern. Whereas any under-estimate would result in securing unprofitable work, an over-estimate would lead to loss of profitable orders.

On completion of a group of products or a job, the actual cost must be compared with its relative estimate, so that the accuracy or otherwise of the pre-determined figure may be revealed. Where previously ascertained costs are utilised as a guide for future estimates, they must be adjusted in the light of current fluctuations in the cost of material, wages or expenses.

Accurate, comprehensive and comparative Statistical Reports, Charts and Graphs appertaining to the varied activities of the Works are indispensable towards scientific administration and reliable costing. Statistical Reports and Charts relating to current material prices, wage rates, operating efficiencies, amount of over-time, short-time or spoiled time, comparative material, wage and expense burden, comparison of estimates with actual costs, progress of production and diverse other matters must necessarily be supplied to the executives to keep them well informed with the numerous activities of the business.

The question of internal transport should receive most careful attention in order to avoid waste of time and expense on unnecessary movements of materials, stores, finished products and components within the factory.

The location of Assembling and Despatch Departments should also be closely considered in relation to the quickest and most economical assemblage and despatch of finished products.

It is thus clear that efficient organisation must materially assist in efficient costing; but **accurate and economical costs must be the basis of every organisation**, and unless this fact is kept in mind, organisation is obviously of no avail. To a manufacturer, the question of cost is ever to the fore, and scientific organisation must help him in keeping his own costs down to the lowest level proportionate to his production. The question before him is not to produce at any cost, but at a price as would defy competition, and yet leave him a margin of profit. It need hardly be stated that, excepting in a monopolised industry, the selling price of a manufactured product must depend necessarily upon the competitive prices of similar articles in the same field. Even in monopolised trades, the selling price must be adjusted in a manner as would create a wider demand and reach the masses.

It is impossible for costs to indicate to the management any inefficiencies and the extent of the various forms of waste, or reveal the sources of economies in production, unless they are linked with a suitable system of Works Organisation based on scientific and intelligent lines.

Q. 5. Explain the statement—" A good system of Costing serves as a means of control over Expenditure, and helps secure economy in manufacture ".

A. A good system of Costing helps towards the control of expenditure in the following directions:

(*a*) The detailed time and performance records of the workers disclose not only the amount of wages earned and the resulting output for each department or section of the works from period to period, but also the output per man-hour for each type of work, thereby revealing all losses due to idle time and wasted efforts, or under-production;

(*b*) The analytical cost data must help determine which operations, processes or units are costly and unprofitable by comparison, so that greater attention may be devoted to those more economical and profitable;

(*c*) By collection, classification and allocation of indirect labour and material for each period, and by constant comparisons of such figures, from period to period, unduly heavy expenditure under any head without any corresponding benefit would be soon detected, and immediate measures would be taken to minimise such losses in future and to set right any errors;

(*d*) A centralised buying and inspection of material, and budgetary control over materials, wages, administrative and managerial expenses and sales expenses as also the labour and material expended on auxiliary services will serve as a great check on all inefficient and uneconomic efforts by a comparison of the amounts actually expended with the predetermined figures;

(*e*) The efficient record and checking of receipts and issues of stores will prevent avoidable wastage and loss resulting from pilfering or careless handling of stores;

(*f*) The perpetual inventory system will bring to light all shortages or discrepancies in store-keeping;

(*g*) The fixing of minimum and maximum limits of quantities of each item to be stocked will prevent the men and machines being kept idle for want of materials and will, at the same time, save unnecessary locking up of capital by over-stocking;

(*h*) The relative advantages of remunerating labour on the day-rate, piece-work, premium or bonus plans may be determined; and (*i*) Comparison of cost data with relative estimates will reveal variations and inefficiencies, if any.

Cost Accounts would thus disclose all unprofitable activities and uneconomic expenditure, and will point out the directions in which economies can be effected.

Q. 6. Describe in what different ways the absence of sound organisation would affect the production cost.

A. In order to secure minimum costs, it is indispensably essential that the activities of the entire productive and non-productive functions of the factory should be closely organised and co-ordinated as would ensure a smooth and even flow of work without undue interruption. Lack of proper organisation would adversely affect the production costs in the following different ways:

(1) Lack of a proper division of the factory into distinct productive sections, and judicious planning with due regard to the different classes, grades and sizes of articles manufactured will affect their production control, and would also fail to give prompt and correct information to the Cost Office;

(2) Unnecessary time and efforts may be wasted due to a want of proper lay-out of the productive departments, or a bad system of internal transport;

(3) Badly organised auxiliary activities will result in an unsound method of allocation of indirect overhead which can only result in securing misleading costs;

(4) In the absence of organisation of the Purchasing Department, raw materials and consumable supplies may be ordered out without any reference to the firm's needs, with the result that this may mean either unnecessary locking up of capital by receiving the stores in excess of requirements, or the production work may have to be delayed for want of supplies in right time;

(5) Due to any inefficient system of inspection, defects in raw materials may not be detected at the time of receipt, and this may result in considerable wastage due to spoilt or scrapped work;

(6) Want of a close and proper check on stores in stock may result in pilferings and leakages, or wastage due to careless handling;

(7) Careless recruitment and placement of skilled workers, and inadequate supervision and control of labour may result in waste of unnecessary time, and must adversely affect productive efficiency and costs;

(8) Where there is no proper system of time and performance records, labour charges may be unduly heavy or may be improperly allocated;

(9) Materials and tools may not be supplied to the productive departments as and when wanted, and this may affect the even flow of work;

(10) Absence of any reliable data of past performances, and want of control by constant comparison of the direct material and labour cost, and indirect expense of each department in due relation to its production from period to period must affect efficiency in manufacture by wastages and loss of time being left undisclosed;

(11) Absence of proper location of Stores, Tools, Inspection, Assembly and Packing Departments must also result in inefficiency;

(12) Want of a proper Maintenance Department would result in production work being held up due to constant break-downs, repairs, accidents, etc., which must also add unnecessarily to cost of production;

(13) Lack of incentives, proper training and promotional schemes would create discontent in the working force with the resultant inattention and inefficiency;

(14) Want of proper enforcement of disciplinary measures will result in confusion, insubordination and tend to disrupt team-work;

(15) Absence of any suitable system of costing will fail to detect any existing deficiencies in the handling of materials, labour and overheads, which in its turn must affect production costs; and

(16) Want of budgetary control over materials, wages, administrative, production, managerial and sales expenses of each period will fail to disclose all inefficient and uneconomic efforts.

Q. 7. State the different ways in which the Cost Data can be utilised to best advantage so as to ensure maximum efficiency.

A. Cost information in relation to productive performances from day to day, if reliable and properly recorded and filed, will prove to be of enormous benefit in measuring and controlling factory efficiency by the following comparisons:

(1) Comparison of actual costs with standard costs or estimates;

(2) Comparison of direct material and direct labour costs of current jobs with similar jobs previously performed;

(3) Comparison of actual Factory, Sales and General Overheads with those recovered from output from period to period and also with the budgeted figures;

(4) Comparison of Prime and Total Costs of current jobs or processes with similar work previously done;

(5) Comparison of costs of similar jobs worked during the same period by different departments;

(6) Comparison of idle time, overtime, spoilt work and scrapped material by different departments or sections during the current period, with the immediate preceding period in due relation to outputs;

(7) Comparison of actual stocks of Finished Goods, Raw Materials and Consumable Stores from period to period, as a result of Perpetual Inventory System; and

(8) Comparison of Cost Records with Financial Records.

Such comparisons would draw attention to any variations from the estimated figures or the standards set, and the causes for any such departures or inefficiencies having been investigated and ascertained, measures would be adopted to set right the mistakes.

Q. 8. To what extent would Cost Accounts help in the compilation of Estimates ?

A. In an engineering business handling a wide range of products, estimating becomes one of the vital factors in the success of the business, and must need most careful handling. It is essential, therefore, that the Estimating Department must work in closest co-operation with the Cost Office, inasmuch as an estimate represents a well-calculated forecast of the likely ultimate cost of a proposed order.

Cost Accounts of past performances, if maintained in comprehensive details and provided the results shown are accurate and reliable, would help considerably in the preparation of estimates for a similar job to be undertaken, after a careful and exhaustive enquiry into all the facts and figures.

While so adapting the past cost data to current circumstances, the questions of any existing or likely variations in prices of materials and cost of labour as also in the administrative and general overheads must be fully examined in all their aspects before filling in tenders for any proposed contracts. The past costs will then have to be adjusted in the light of further information thus gathered to bring them on a line with current conditions.

Q. 9. Enumerate the principles of Sound Administration.

A. Sound Administrative Principles must relate to the following:

(1) Determination of the objective of the undertaking after most careful and exhaustive analysis of the varied factors surrounding each particular case;

(2) Devising the best lay-out, and acquiring the most suitable and up-to-date equipment;

(3) Planning the Departmentalisation of the entire work into definite sections to ensure proper supervision and control;

(4) Formulation of definite policies by way of direction and guidance to those authorised to function;

(5) Selection of personnel best suited for each section of the works and for each individual accomplishment;

(6) Functionalisation of each major activity, and establishing definite division of authority and responsibility;

(7) Establishing a close inter-relation of all the sections of the business, and a systematic co-ordination of all activities;

(8) Formulation of most favourable marketing and distribution policies;

(9) Establishing a centralised and sound executive control; and

(10) Promoting Welfare Schemes for the well-being and contentment of employees.

Q. 10. What duties and responsibilities are usually delegated to the Managerial Section of a large-sized works ?

A. The following are the duties and responsibilities of the Management:

(1) Formulation of definite regulations, procedures, methods and systems for the faithful accomplishment of work;

(2) Establishing a suitable system of wage-payment with due regard to the nature of the industry;

(3) Establishing and developing suitable standards for all the varied functions to serve as a means for measuring efficiency and economy of performance;

(4) Introduction of a highly efficient system of Organisation as would ensure individual and collective efficiency whereby its every integral section would function in the shortest time, with the least effort, at the smallest cost and in complete harmony;

(5) Establishing and developing a system of supervision and inspection to ensure desired achievement and disclose all leakages, wastages and spoilage of work;

(6) Introducing a proper system of Cost Accounting as would not only serve to indicate proper costs, but would serve to reveal any inefficiencies in the machinery, methods or implements, or leakages and waste of material, time or expense;

(7) Maintaining a system of prompt, accurate and serviceable records, and instituting methods of securing reliable analytical data and internal reporting for each phase of activity;

(8) Developing means of introducing new ideas, new equipment, new methods, new designs and new products by constant research and experiment, with a view to secure economy in costs and promote advancement;

(9) Developing marketing and publicity methods;

(10) Developing and maintaining co-operative spirit and group-sense between all personnel so as to ensure their faithful and willing attachment to duty;

(11) Introducing a system of proper training and fair promotional schemes;

(12) Establishing most desirable and comfortable working conditions, and seeking for internal peace, discipline and harmony; and

(13) Maintaining a well-balanced and fair-minded attitude to all.

Q. 11. Describe how the Cost Accountant should co-operate with other sections of the Works in order to carry out his duties efficiently.

A. As the Cost Office will have to depend largely upon information supplied in shape of analytical and other statements by the different sections of the business, it seems highly essential that the Cost Accountant should work in complete harmony and close co-operation with them in order to enable him to fulfil his duties satisfactorily.

He would thus need particularly to co-operate in the following ways:

(*a*) With the Technical Staff to acquire a detailed knowledge of the productive operations and processes to enable him to install a suitable costing system;

(*b*) With the Productive Departments to secure analytical reports of periodical production, including completed products and work in process;

(*c*) With the Time-keeping Department for the receipt of original or duplicate copies of daily or weekly time-cards or time-tickets;

(*d*) With the Wages Office for particulars of weekly or monthly departmental wages paid, classified into productive and non-productive labour cost analysis;

(*e*) With the Departmental Heads or Foremen for regular supply of analytical records of completed jobs and their corresponding labour hours and material specifications;

(*f*) With the Financial Section to secure details of direct charges to be made to the jobs and the actual periodical indirect expenditure;

(*g*) With the Stores Department for supply of periodical analytical lists of materials and stores issued to the jobs, materials returned from jobs, and transfers from one job to another;

(*h*) With the Sales Department for supply of periodical sales and publicity expenses with corresponding sales;

(*i*) With the Buying Office for supply of figures indicating materials specifically purchased and supplied direct to the jobs; and

(*j*) With the Finished Stock Department for periodical information regarding receipts of finished products from the producing departments and issues thereout to the Sales or Dispatch Department.

From the above, it will be seen that the Cost Accountant has to rely upon information to be supplied by the several departments to enable him to compile Cost Sheets, and the ultimate object of accurate and prompt costing cannot be achieved unless he is prepared to co-operate with the other sections of the works.

Q. 12. Discuss the statement that "Costing is a mere approximation of figures".

A. There is no doubt that some approximation of expenses always enters into every system of Cost Accounting due to the following reasons:

(*a*) All indirect expenses such as labour and material expended on auxiliary services and management cannot be charged to production directly like direct material and labour, but must be allocated to the various cost units on some consistent and reasonable basis by way of percentages to represent factory and office oncosts; and

(*b*) Further, as certain expenses such as Travelling Expenses, Commission, Advertising, Printing, Directors' Fees, Branch Expenses, etc., cannot be definitely ascertained till at the end of the financial period, and as Cost Accounts, in order to be useful, must be promptly made out so soon as the jobs are completed, it is inevitable that these be included in the oncosts on an estimate based on past experience.

All such estimated figures included in costs must, however, be compared with the amounts as actually expended during each period, so that necessary adjustments may be made in the future costs in the light of the facts revealed.

In any case, where the Cost Accounts are prepared on truly scientific basis, and are compared frequently with actual expenditure as disclosed by the financial books, the approximation should be very close to the facts.

Q. 13. What essential points should be kept in view while installing a new Costing System ?

A. Before devising a suitable system of Cost Accounts when called upon to do so, the nature of the business and its special requirements, the manufacturing processes involved, and the division and sub-division of the productive and non-productive sections of the organisation must call for most exhaustive and careful study. The following points would, however, need to be kept in view in all cases:

(1) The system should be simple, practicable and elastic so as to be capable of adjustment as and when occasions arise;

(2) The accountant in charge of the Cost Department must be conversant with the intricacies of cost accounts and must be capable of grasping the manufacturing technique of the particular business so that he may know how best to collect, classify and allocate the expenditure in shape of materials, labour and expense, in order that the same may be equitably recovered from the productive units;

(3) The system must admit of the fullest co-operation of the Cost Office with the technical, commercial and financial departments of the business;

(4) There should be a proper standardisation of all Cost Records and Forms, and uniformity in size of all Cost Statistics and Forms as far as possible;

(5) A clear distinction should be drawn between the Forms and Statements to be used in regard to information for Direct Material, Labour and Charges from those to be utilised in respect of Indirect Material, Labour and Expense, by the use of either different tinted paper or by printing in different coloured inks;

(6) There should be a close co-ordination and inter-locking of all productive and non-productive activities of the concern and a sound system of internal check so as to facilitate prompt and reliable getting in of all the necessary information for the purposes of costing;

(7) The periodical results as shown by the Cost Accounts should be capable of being reconciled with those shown by the Financial Accounts;

(8) In order that the system may prove a profitable investment, it should not be unnecessarily elaborate or disproportionately expensive; and

(9) The system of record and filing should be so shaped as to permit of ready comparison of similar jobs or processes already performed from time to time, so that the causes for any excess over the predetermined costs may be traced, and any waste of material, labour or expense may be brought to light.

Q. 14. Mention some of the causes which would result in a failure of Costs.

A. Any one or more of the following reasons may account for the system of Cost Accounts failing to achieve its true objective:

(1) The system may not be suitable to the specific requirements of the business;

(2) Lack of proper co-operation between the Cost Office and the Purchasing, Stores, Wages, Financial and Technical Departments;

(3) Adequate costing data may not be available promptly and in understandable form so as to enable those in management to benefit thereby;

(4) Want of proper system of internal check on material issues and on time and performance records;

(5) Defects in collection, classification and allocation of indirect expenses;

(6) Wrong methods of oncost recovery from costs;

(7) The Costing System may be unnecessarily elaborate and cumbersome;

(8) The Cost Office staff may be inadequate or inefficient;

(9) Lack of proper understanding on the part of the executives to utilise cost statistics and other data to best advantage; and

(10) Financial Records may not have been so maintained as to admit of reconciliation with costing results.

Q. 15. Describe carefully how Cost Accounts facilitate the fixing of Selling Prices.

A. The main purpose of Cost Accounts is to enable the manufacturer to arrive at the actual cost of each process, job or other unit of production in all its constituent elements; but the process of detailed classification and analysis which must follow in any system of cost-finding must help the management to detect inefficiencies in the use of material, labour, machinery or manufacturing technique, and invite attention to avoidable wastages. Besides, prompt and accurate Cost Accounts would help materially in maintaining a close check and control over the whole of the expenditure, productive and non-productive, and thus bring about reduction in costs by revealing sources of economy.

The fixing of selling prices must necessarily depend upon a number of factors such as the nature of the products and the likely customers, but competitive influences must after all decide the prices at which the products can be sold on the open market. Reliable cost data by indicating the true cost of production would, however, serve to disclose the margin of profit that would be left if the goods were sold at competitive prices, and would present possibilities of reduction in costs by increasing the output or by eliminating wastages that may have been revealed.

In any case, Cost Accounts must indicate the minimum economic selling price of the products, and if such price cannot stand competition in the open market, there will be no other alternative for the producer but to abandon future production of such products and devote himself to more profitable lines. In some cases, an exhaustive scrutiny of cost data might help devise ways and means of effecting economy in production costs.

Q. 16. Describe the relative advantages and disadvantages of Bound, Loose-leaf, and Card Systems for Cost Records.

A. The Loose-Leaf or Card System of Cost Records is now adopted by a large majority of manufacturing undertakings as it is found more convenient and suitable than Bound Books for recording and analysing the mass of information required for costing purposes.

The only advantage that attaches to the use of Bound Books is that the chances of records being lost, fraudulently substituted or destroyed are reduced to their minimum; but in any case, they are not so many as when such records are made on loose sheets or cards. Bound Books, however, have the following disadvantages:

(*a*) As costing records would be needed by several officials for reference and collection of data at the same time, bound books would be cumbersome;

(*b*) Prompt cost recording is not possible as the work cannot be divided between a number of clerks;

(*c*) Bound books cannot be adapted to machine accounting which becomes essential for sorting and tabulating the vast amount of information necessary to be extracted; and

(*d*) As dead matter cannot be removed from bound books, rapid reference would be considerably hampered.

The chief characteristic of the "Loose-leaf" system is that any and every leaf can be readily taken out and any number of new leaves may be inserted whenever desired, and once the Record is securely locked, no leaf can be removed except by tearing, or unless the lock is opened.

Records in Loose-leaf form possess all the advantages which cannot be obtained from Bound Records as above described.

Where, however, the accounts are numerous but the entries in each are limited, loose leaves become unwieldy and the Card System becomes more suitable, as the Cards can be arranged and filed away in specially made cabinets in any order.

In large undertakings, the Card System of Cost Records is now utilised to a considerable extent due to the enormous saving in time in the compilation of the necessary data from specially tabulated cards for stores requisitions, time-keeping, job performance, stock record and other purposes. By the employment of the Card System, the sub-division of work is greatly facilitated, thus considerably expediting the record. Besides, the costing records are easily capable of being referred to by several members of the staff simultaneously for different purposes, which is not practicable in case of bound records. The Cards recording each type of information are then filed and are readily available for future reference.

The chief disadvantage of the Loose-leaf or the Card System in the loose sheets or cards being lost, destroyed or fraudulently substituted can be overcome to a great extent by an efficient control over unused cards or sheets, by the key of the loose-leaf binder or the card locker being kept by some highly responsible official. In a majority of businesses, a combination of all the three systems is in use as the circumstances may call for.

Q. 17. To what extent would the site of a factory influence the total cost of production ?

A. The selection of a most suitable site for any proposed manufacturing concern requires most careful consideration. As the removal of a factory from one location to another is a highly costly affair, an exhaustive analysis of all the particular needs of the business must be made, and the good and bad points of the various available localities must be thoroughly investigated before finally deciding upon a site that would best meet its specific requirements. The important factors influencing the selection would be availability of raw materials and labour supply, supply of power, transportation facilities, nearness to consumers' market, local rates and taxation, and climatic conditions.

Where the raw materials are bulky and heavy, the location of the plant near its source of supply would be desirable, as this would entail less transportation costs. Nearness to the source of supply would also ensure a regular supply at desired intervals, which in its turn would prevent the work from being held up for want of raw materials. It will further save unnecessary capital being tied up in maintaining large stocks, and would be a vital factor where the raw material is of a perishable nature.

The availability of the requisite skilled labour nearby would also need to be considered in the choice of a site. Where, however, relatively little skill is required, the labour problem will not be a weighty consideration, as the available workers can be readily trained. The rates of skilled and unskilled labour prevailing in the locality will be an equally important consideration. The question of the locality being comparatively free from labour unrest must help in favouring the choice. Housing facilities for workmen, their living conditions and standard of efficiency must also count.

Where a considerable amount of power is required for manufacturing processes, the question of economic power supply must become a dominant factor. This factor will, of course, be considered along with the relative advantages of the concern generating its own power by operating its own power plant.

The transportation factor must receive attention in relation not only to the proximity of supplies of raw materials, but also in regard to the dispatch of the firm's products to the consumers and marketing facilities.

The climatic conditions must be inquired into to ascertain that they are not subject to continued extremes of temperature as would adversely affect the health of the workers and reduce the output. In some industries, the question of suitable temperature is an important element in securing productive efficiency. It should also be seen that the local taxes are not excessive, and municipal bye-laws are not very restrictive. The cost of the land will be another factor for consideration.

The distance of the plant from the workers' homes and what available transportation facilities for employees there exist must also merit consideration. Where the workers have to travel some distance for reaching the works, the wages must include the fares. If there is no means of transport, the firm will have to incur the cost of transportation facilities or arrange for their housing accommodation near the works.

While deciding upon the area to be acquired, the problem of future expansion and development of the works must be kept in view. The surroundings would also need to be agreeable.

Where there are no repair shops in the vicinity, it would become necessary to incur the additional expense of maintaining a stock of spare parts against emergencies.

It should be clear that all the above factors most vitally affect the production cost and the consequent success of the undertaking, and would need to be carefully weighed before coming to a decision as to the final choice of a site.

Q. 18. What part does an Inspection Department play towards economy in costs and all-round works efficiency ?

A. As the reputation of any manufacturing concern and the degree of its success would depend so much upon the quality and low price of its products, an efficient Inspection Department must enjoy a great deal of importance, and is now considered an indispensable part of every factory organisation. As any inefficient system of inspection of raw materials or work in process of manufacture would entail losses at subsequent stages of production, a highly efficient Inspection Section to examine and report upon the work involved in the various stages of the productive and other factory activities becomes necessary to ensure workmanship of a high order and help maintain the quality standard, and secure economy in production cost.

The main function of the Inspection Department must always be to detect faults and defective work while the operations are in progress, and thus to bring down the number of rejections at the final inspection to their minimum, so that the waste of money, time and efforts resulting from scrapped work may be reduced to a negligible figure.

The work of the Inspection Department may briefly be classified under the following heads:

(1) Inspection of Raw Materials and Stores on arrival;
(2) Inspection of Machinery to ensure proper adjustment and a high efficiency of maintenance;
(3) Inspection of Machining Operations and Components whilst actually in process;
(4) Inspection of Piece-work and Finished Parts supplied from outside;
(5) Inspection of Sub-assembly fittings;
(6) Inspection of Final Assembly of Products;
(7) Inspection of Accessories and Tools; and
(8) Inspection of Internal Transport and other Auxiliary Services.

As defects in completed products may arise from inferior materials, inefficient plant, tools and implements, improper manufacturing methods, or careless assembly, it must be evident how essential an organised system of inspection would be in any works for the attainment and maintenance of standards and specifications on which the reputation of the concern must depend.

Q. 19. Describe carefully an ideal Tool Stores Service and state to what extent it would help towards efficient production.

A. There must be a close association of the tool stores with the productive departments, as tools are an essential aid to production. A good tool service would thus be an indispensable adjunct to any productive activity.

The planning and lay-out of the tool shop and stores should be fixed with due regard to the size of the works and nature of the industry. In large works covering an extensive area, it generally becomes necessary to have a main tool stores supported by sub-stores in each department. The main stores, in such a circumstance, must maintain accurate and complete records of the issues to and returns from each such sub-store. Each sub-store would equally maintain correct and up-to-date records of its issues, replacements and balance quantity of each class and size of tools.

System and orderliness must be the key-notes of any ideal tool stores. There must be definite places allotted to different types of tools, and every tool must be in its proper place.

A considerable economy in time and efforts is effected in the handling and record of tools by a careful classification of the various types and a well-thought-out arrangement of the tool room, as this would not only conduce to simplify the storage work and the recording of incomings and outgoings, but would also greatly facilitate their immediate identification as and when wanted.

The storage racks, bins or boxes should be arranged in as compact a form as possible so as not to take unnecessarily more space, and should be capable of extension, if need be. Each type of tool must have its definite location assigned to it, and the entire tool room should have an orderly appearance.

In case of tools which are in constant requirement, they should be so stored as would be easily accessible and can be easily removed and replaced.

In engineering and similar works where high quality tools are in use, it becomes necessary to store those required for each type of machines in separate racks or bins. In businesses where repetitive jobs of a particular type are constantly taken in hand, it is advantageous to have standard lists of jigs, tools and gauges required for such purpose so as to save time and trouble.

No tools should be issued without a requisition signed by the foreman of the department needing them, and there should be a proper acknowledgment from the recipients.

The tool room should not be easily accessible to all and sundry, as a precaution against pilfering or any other misuse.

There should be a Register of Tools keeping a detailed record of all tools issued out to the different sections of the works, those returned to the tool room for repairs or replacement, and those on hand.

There should be a system of periodical checking of tool stock and issues. All worn-out and obsolete tools should also be accounted for. The question of proper valuation of tools on hand at each financial period should also receive most careful attention.

The Planning Department will also maintain a close watch over the cost of all tools manufactured as also on the cost of all repairs and replacements of tools.

All repairs and replacements must be carefully attended to, and bearing in mind the fact that the tools service should help production and not dislocate it, every tool must be kept in proper working condition and must be available on demand. All tools that are defective in any manner should be repaired before they are put away in the racks ready for re-issue to the shops.

There should be a system to ensure that men leaving the service or suspended return all the tools in their possession before they are paid out.

Prompt and efficient tool service is indispensable in any works as it would tend to result in good workmanship and help maintain the quality of the product. It would lower the production cost by turning out the work in less time, with less labour and less spoilage and scrap. It will ensure the maintenance of minimum stock consistent with the production requirements and thus reduce the capital tied up in unnecessary tools. It will prevent theft and wasteful usage. An effective tool maintenance service will reduce the tool cost by prolonging the life of tools.

Q. 20. Give some common instances of avoidable wastes in factories, and state how these can be eliminated.

A. Unnecessary wastes are frequently encountered in factories due to any one or more of the following reasons:

Want of clear and adequate instructions.—This would entail loss of time, as the workers will have to wait for further guidance as to methods of work.

Jobs not ready at hand.—This would mean waiting by the productive operators for the next job after the completion of the one in hand.

Want of regular supply of material or tools to the jobs.—This would hold up production work and result in waste of time.

All such wastes of time and effort would impair the general efficiency of labour by creating mental irritation or dissatisfaction among diligent workers due to such interruptions which prevent them from yielding best results. Further, the cumulative effect of such recurring short stoppages may constitute an appreciable loss of productive time. In all these cases, the unnecessary waste of time can be avoided by the sectional foreman seeing to a regular supply and proper allocation of materials and tools to the jobs in time, and by ensuring that full and proper instructions are given along with specifications, and that these are clearly understood by the operators.

Waste of Consumable Stores.—Where supplies of these are usually drawn from stores in large quantities without reference to current requirements, a lot of waste would follow as a result. Such an extravagant and wasteful practice can be remedied by holding each foreman responsible for the supplies requisitioned by him. A most useful check in this connection can be obtained by a weekly or monthly scrutiny of his consumption in relation to output and also by a comparison of the same with that of the other departments.

Loss through Scrapped Work.—This is another cause of substantial waste either from poor workmanship due to lack of care in allocating jobs or giving instructions, inferior quality of raw materials, or want of adequate supervision. The loss under this head can be prevented by the foreman of each section being held responsible for scrapped work in excess of the usual percentage.

Waste of Efforts.—This may also arise due to faulty lay-out or routeing, rejection through inferior quality of material, use of inappropriate tools, or the inadequacy or imperfection of machines and implements. Waste of efforts may also result from lack of care in the selection and placement of right men for each particular class of work.

Breakage or spoilage of goods.—This may result from inattention and careless handling of tools, materials and equipment due to fatigue and boredom, bad lighting, congestion of space, or other unsuitable conditions of work.

Waste of Power and Lighting.—Considerable savings can be effected by ensuring that there is no wasteful use of power or lighting. The foreman in charge of each section should see that where the machines are grouped, they are switched on for power only when they can all be usefully employed. It should also be seen that light and power are switched off as soon as the purpose is served.

A system of sound organisation would devise best possible lay-out, and see to the adequacy and efficiency of the type of equipment and the personnel provided. It would ensure a judicious allocation of operations, machines and jobs, and an efficient handling of internal transport of materials, stores and tools as would result in optimum output and bring about reduction in idle time to its minimum. It will also insist upon the maintenance of a detailed analytical record of all idle time by each department or workshop and its being reported weekly or monthly to the Works Manager so that the parties responsible may be called to account.

Q. 21. What objects should be kept in mind, and what purpose should be served by any system of cost-finding ?

A. To enable the manufacturer to have a complete hold on the details of his business, the system of cost-finding must serve the following purposes. They are:

(1) To enable him to ascertain accurately the total cost of each product, process, job or other unit of production in all its constituent elements;

(2) To enable a check and control to be maintained on the whole of the expenditure by a detailed analysis and classification thereof with due regard to the productive and non-productive factors;

(3) To serve him as a guide in deciding upon his price-fixing policy;

(4) To enable reliable estimates based on past experience and records to be prepared for giving quotations or filling in tenders, subject of course to any prospective changes in market prices of materials and labour, or any likely change in overhead expense;

(5) To indicate to the management any inefficiencies in the use of machinery, equipment, material or labour, and to invite attention to any wastage arising therefrom;

(6) To reveal sources of economies in production by way of necessary changes in designs, tools, methods of production or output;

(7) To provide reliable and comprehensive data for comparison of costs of different production units from period to period, and also to indicate how the actual costs of performance compare with the estimates;

(8) To provide a reliable control on the large amounts expended on the materials and stores received and consumed, and the wages paid;

(9) To ascertain which sections of the business are profitable and which are not;

(10) To serve as a check on the results as expressed by the Financial Accounts; and

(11) To reveal defects in any section of the organisation as a whole.

Q. 22. In the organisation of a factory, under whom would you place the Cost Accountant ?

A. The position and level of authority in which the Cost Accountant would be placed must depend upon the size of the organisation and the nature of the industry.

In a small concern, the Cost Accountant works usually under the Chief Accountant and is responsible to him. In a concern of any magnitude, the Cost Accountant, although working in full collaboration with the Chief Accountant, is independent of him and is responsible only to the Works Manager.

In still larger concerns, it seems desirable that he should work independently of the Works Manager, although there should exist the closest co-operation between the two. His responsibility in such a case would lie directly to the General Manager or the Managing Director. If the Cost Accountant is made to work under the guidance and control of the Works

Manager, it is very likely that any excessive costs of material, labour or overhead, or any wastages may not be brought to the notice of the General Manager, as it would serve to disclose the deficiencies of the works management, and, as a result, the efficiency of the undertaking would suffer.

Q. 23. State briefly the importance of an efficient system of Plant Maintenance on the production costs.

A. In spite of a regular flow of supplies of raw materials and tools to the jobs, and the Progress System being efficiently maintained in all other respects, an organised system of Plant Maintenance must necessarily help further towards smooth productive efforts for regularising the output. The maintenance of the plant in a state of high efficiency must result in—

(*a*) Improvement in quality and quantity of output;

(*b*) Reduced chances of machinery breakdown or accidents;

(*c*) Avoidance of delays due to repairs and maintenance;

(*d*) A more contented and willing group of operatives; and

(*e*) Increase in the working life of the plant.

It is essential, therefore, to ensure that the plant is always maintained in a state of excellent working condition by the institution of an adequate and efficient maintenance service. Any laxity in this respect is sure to entail losses to the concern arising from faulty production, constant breakdown in machinery interfering with the continuous flow of work, and earlier deterioration of machinery. A well-organised maintenance service will also help materially in securing high efficiency in operative processes and in keeping down manufacturing costs by reducing repairs and replacements.

An efficient system of Plant Maintenance must ensure that the maintenance costs are kept well within the budgeted limits of each period. A comparison of departmental costs of repairs and maintenance from period to period will serve to detect any excessive charges incurred, and will thus help locate inefficiencies in this direction.

Q. 24. Explain the distinction between (a) Estimate, (b) Costs, and (c) Prices, and show how they are related to each other.

(*a*) **Estimates** represent the probable costs in materials, labour and overhead expenses which will be incurred in manufacturing a specific job, process or a group of products. Ascertained costs of similar work previously done will usually be taken as the basis for giving any estimate, but these will be subjected to any anticipated changes in cost of material, labour or expense due either to fluctuations in market conditions or any changes in methods of work.

(*b*) **Costs** represent the actual total cost in labour, material and expense of any unit of production or specific job undertaken. The true costs having been ascertained on completion of the job, a careful comparison of the same with its relative estimate will serve to reveal the accuracy or otherwise of the predetermined figures by indicating where there have been departures from the estimate. The current costs will then serve as the basis for future estimates.

(*c*) **Prices** represent the Sale Price of the product arrived at after adding a certain percentage of profit to the actual cost.

CHAPTER II

CONSTITUENT ELEMENTS OF COST

Q. 25. Enumerate the constituent Elements of Cost.

A. The constituent elements of cost are as under:

(*a*) **Direct Charges—**

(1) Direct or Productive Materials.
(2) Direct or Productive Wages.
(3) Direct or Chargeable Expenses.

(*b*) **Indirect Charges—**

(4) Works Expenses or Indirect Factory Expenses.
(5) Administrative, Office or Establishment Expenses.
(6) Selling and Distribution Expenses.

Q. 26. Distinguish between the following:—
(a) Direct Materials and Indirect Materials; and
(b) Direct Wages and Indirect Wages.

A. There are two kinds of materials which enter into the factory cost of a product. The material of which the product is made and which can be identified and charged direct to each job, works order or process is called Direct Material. Material which does not form part of the product itself, but which is used in running of machinery such as oil, cotton waste, etc., or for other non-productive services, and which is not capable of being allocated to any specified piece of work, is known as Indirect Material.

Two distinct classes of labour enter into the production of a manufactured article. There is the Productive or Direct Labour which means labour applied to a particular manufacturing operation or job, and which can be definitely measured and directly charged to the separate products or jobs. There is also the Non-productive or Indirect Labour engaged upon auxiliary services connected with the running of a factory as a whole, and which it is not possible to charge directly to any specific jobs, such as labour of foremen, supervisors, men in charge of power plant, time-keepers, tool-keepers, storekeepers, builders, carpenters, repairers and others engaged in general services of the factory.

It is highly essential for the purpose of costing to maintain distinct records of Direct Material and Direct Labour from Indirect Material and

Indirect Labour, in view of the fact that whereas the former are included in the Prime Cost of Products, the latter form part of the Works Oncost.

Q. 27. State the main classifications in which the expenses of any manufacturing business are generally divided.

A. The whole of the expenses of any manufacturing business can be divided into three main classifications:

(1) Administrative Expenses.

(2) Factory Expenses.

(3) Selling and Distribution Expenses.

Administrative Expenses represent such items of expenditure as relate to the general and financial administration, direction and control of the undertaking. They are alternatively known as Administrative Oncost, Office Oncost, Establishment Oncost or General Oncost or Overhead.

Factory Expenses include the cost of indirect material and consumable stores, indirect labour and all other indirect expenses incurred in the running of the works. They are also known as Factory Oncost, Works Oncost or Works Expenses or Works Overhead.

Selling Expenses consist of items of expenditure which relate to the running of the Sales Department and other efforts spent towards securing orders and retaining markets. They are also called Selling Oncost or Sales Overhead.

Distribution Expenses would relate to the cost of distribution of the factory products, and are also known as Distributive Oncost or Overhead.

Q. 28. Define the following, and give the alternative names by which each is known:—

(a) Prime Cost;

(b) Works Cost;

(c) Office Cost; and

(d) Total Cost.

A. (*a*) Prime Cost of any product comprises only the direct material, direct labour consumed in any product, and direct or chargeable expenses specifically attributable to the job. It is also known as Flat Cost or Basic Cost.

(*b*) Works Cost of a product represents not only its Prime Cost, but the proportion of Works or Factory Expenses properly chargeable against its production. It is also known as Factory Cost.

(*c*) Office Cost is made up of Factory Cost with an additional proportion of Office or Administrative Expense exclusive of Selling and Distribution Charges. It is also known as Gross Cost or Cost of Production.

(*d*) Total Cost is the sum of all the items of expenditure incurred in producing or manufacturing and distributing any product. It comprises Works Cost plus a proportion of Office Oncost and a portion of Sales and Distribution Oncost properly chargeable to that product. It is also known as Final Cost.

Q. 29. Show the Components of Total Cost in their relation to the Selling Price of a product, in form of a table.

A.

Direct or Productive Material	+	Direct or Productive Labour	+	Chargeable or Direct Expense	=	Prime Cost, Flat Cost or Basic Cost
Prime Cost, Basic Cost or Flat Cost	+	Works Expenses or Factory Expenses or Works Oncost			=	Works Cost or Factory Cost
Factory Cost or Works Cost	+	Administrative Expenses, or Office Oncost, or Establishment Oncost			=	Gross Cost, Cost of Production or Office Cost
Gross Cost, Cost of Production or Office Cost	+	Selling & Distribution Expenses, or Sales Oncost			=	Total Cost or Selling Cost
Total Cost or Selling Cost	+	Profit			=	Selling Price

Q. 30. Give a comprehensive list of items usually included in Works Oncost or Works Overhead.

A. The following expenses are usually included in Factory Expenses or Works Oncost:

Indirect Material—Oil, waste, rags, greases, etc.

Indirect Labour—Wages of Foremen, Supervisors, Inspectors, Rate-fixers, Store-keepers, Time-keepers, Crane-drivers, Enginemen, Yard Labourers, Transport Labourers, Watchmen, Cleaners, Repairers, etc. ; also salaries of Works clerical and technical staff and all general factory labour.

Factory Rent, Lighting, Heating and Cleaning.

Power and Fuel.

Repairs to Plant, Factory Buildings, Tools and Equipment.

Depreciation of Plant, Factory Equipment and Buildings.

Insurance of Factory Buildings, Plant, Stores and Equipment.

Technical Directors' Fees and Salaries.

Works Administration and Management Salaries.
Cost of Perishable Tools.
Workmen's Compensation Insurance.
Works Stationery, Telephone, etc.
Purchasing Department Expenses.
Store-keeping Expenses.
Power-house Expenses.
Labour Department Expenses.
Drawing Office Expenses.
Experimental and Research Expenses.
Tools Department Expenses.
Works Canteen and Welfare Expenses.
Internal Transport Costs.
Wastage of Material, scrapped work, etc.
Stores Adjustments—Deficiencies and Discrepancies.

Q. 31. State what items comprise Establishment Overhead.

A. The following items are usually included under this heading:

Office Lighting, Heating and Cleaning.
Repairs to Office Building and Equipment.
Salaries and Fees of Administrative Directors.
Office Printing, Stationery, Telephones and Postage.
Insurance of Office Building and Equipment.
Depreciation of Office Building, Fixtures and Equipment.
Salaries of General Clerical Staff.
Salaries of Chief Accountant, Cost Accountant, General Manager, and Secretary, and their respective Staffs.
Audit Fees and Legal Charges.
Rent and Taxes relating to Office Building.
Interest on Debentures, Bank Loans, Overdrafts, etc.
Sundry Office Labour.
Sundry Office Supplies.
Directors' Travelling Expenses.
Trade Subscriptions.

Q. 32. Give a detailed list of items you would include under Sales Overhead.

A. Sales Overhead may be divided into:

(*a*) Selling Expenses; and

(*b*) Distribution Expenses.

Selling Expenses will include:

Salaries of Sales and Publicity Staff;

Show-room Expenses;

Travelling Expenses of Salesmen;

Commission to Sales Agents and Travellers;

Advertising Expenses;

Cost of Samples, Catalogues, Circulars, etc.;

Rent, Maintenance and Insurance of Sales Office Furniture and Equipment;

Bad Debts and Discounts to Customers;

Stationery, postage, telephones and general expenses of Sales and Publicity Departments;

Expenses of Branches and Sales Agencies.

Distribution Expenses will include:

Maintenance of Delivery Vans;

Carriage outwards and other Transport Charges;

Cost of Warehousing of Finished Stock;

Salaries to Dispatch Clerks;

Stock Shortages;

Rent, Repairs, Insurance and General Charges of Dispatch Dept. and Warehouse;

Cost of After-sale Services;

Packing Cases and Packing Charges;

Cost of Loading Conveyors.

Q. 33. Explain the difference between "Chargeable" and "Non-chargeable" time in relation to Costing.

A. In a manufacturing business, there are two distinct classes of workers, viz. the productive and the non-productive. The wages paid to the productive workers are classed as Direct Labour, and inasmuch as the same can be measured and charged directly to the jobs, production orders, or processes concerned, the time expended on such productive labour is known as "Chargeable" time, and forms part of the Prime Cost of the products. The direct or productive workers are thus those who are engaged on the main business of production.

There are other workers who are engaged in supplying and maintaining the auxiliary services such as power, lighting, heating, store-keeping, tool-keeping, repair work, plant maintenance, inspecting, supervising, cleaning, etc., which although subsidiary to the main business of production are, however, essential for the running of a factory. Such workers come under the class of Indirect or Non-productive Labour, and the time spent by them in such general services is known as "Non-chargeable" time, as it cannot be definitely attributed to and directly charged to any specific job or cost unit. The wages paid to such men form part of the Works Oncost which is distributed over the several departments or sections of the works on some consistent and reasonable basis by way of a percentage either on direct labour, or direct man-hour, or prime cost of the output of each department or section.

In order to distinguish Direct Labour from Indirect Labour, it is necessary to provide the Direct Workers with Time-Cards or Job Tickets on a different tinted paper from that used for non-productive workers.

Q. 34. Give a list of Direct or Chargeable Expenses which are usually recovered in Prime Costs.

A. The following items usually come under the heading of Direct or Chargeable Expenses:

(1) Cost of patterns, drawings or designs specifically prepared for a particular job and which cannot be utilised for other purposes;

(2) Hire of special machinery, plant or other equipment such as portable cranes, traction engines, scaffolding, etc. ;

(3) Architects' and surveyors' fees in connection with some particular contract or job;

(4) Travelling expenses and subsistence allowances incurred by experts and others in supervising or reporting on work executed away from the works;

(5) Cost of any experimental work carried out specially for a particular job; and

(6) Cost of carriage or freight inward incurred on supply of special materials directly to the job.

Such expenses are usually incurred when a concern undertakes some outside constructional work far away from the works.

Q. 35. Enumerate the items which are usually excluded in Costs.

A. The following items, although ordinarily found in Financial Accounts, are excluded in Costs:

(*a*) Profit or Loss on sale of fixed assets;
(*b*) Exceptional losses due to removal of business;
(*c*) Damages payable at law;
(*d*) Excessive depreciation of Plant, Buildings, etc. with a view to create Secret Reserves;
(*e*) Appropriations to Sinking Funds for redemption of liabilities;
(*f*) Charitable Donations;
(*g*) Amounts written off goodwill, preliminary expenses, brokerage on shares, underwriting commission, etc.;
(*h*) Debenture Interest, where interest is not included in costs;
(*i*) Loss due to obsolescence of machinery;
(*j*) Excessive provisions for Doubtful Debts and Discounts;
(*k*) Income-tax, if charged to Revenue; and
(*l*) Credits in respect of rent, interest or transfer fees.

CHAPTER III

MATERIAL COST AND STORES CONTROL

Q. 36. Explain why a proper control of materials and other supplies becomes necessary in a good system of costing.

A. Efficient and economical selection, purchasing, storage and handling of raw materials and consumable stores require great care, skill and experience, as considerable quantities of these are usually consumed by any large-sized manufacturing concern. The great importance of careful buying and handling of materials need hardly be emphasized in any system of costing, as it would serve to keep the material cost at its lowest level.

The vital problem for the Buying Department would thus necessarily be as to (*a*) what quality to buy, (*b*) from whom to buy, (*c*) when to buy, (*d*) in what quantity to buy, and (*e*) at what price to buy.

All orders for purchases must issue only from the duly authorised official.

Right quality and uniform standard must necessarily be looked to, if the high quality of the product is to be maintained.

A rigid inspection as to the quality of the goods on arrival would prevent a lot of wastage arising from spoilt work which would result in loss.

A careful checking of the quantities received and the prices charged must also form part of organised buying.

Adequate stocks of raw materials and stores would prevent the production processes being held up for want of these. It should also be seen that there is no undue overstocking, as this would mean unnecessary tying up of capital.

The purchases must of course be effected at the lowest price in order to keep down the cost of production. The buyer must, therefore, always be on the watch for favourable markets.

All issues to the different departments of the business must be duly authorised and properly recorded in order that any wastage may be brought to light, and that the right cost units would get the debits.

It is equally essential to ensure that the store-keeping is conducted on most efficient lines, as otherwise considerable mishandling, pilferage and waste would ensue with the resultant loss to the concern. It is only when all the above precautions are taken that the material cost would be reduced to its minimum.

Q. 37. Describe the essentials for the proper functioning and control of the Purchasing Department in a large factory.

A. In a large factory, it is always desirable that all purchasing either of machines, materials, tools or stores should be carried out by a special department set out for the purpose so that there may be no duplication or overlapping, and more economic rates can be secured.

The duties of such Department must briefly be—

(1) To purchase materials, equipment and supplies as authorised under properly recognised requisitions;

(2) To obtain materials of a uniformly standard quality;

(3) To make purchases at lowest costs commensurate with best buying terms and obtain prompt deliveries;

(4) To keep itself well-informed on market trends, up-to-date purchasing methods and the normal requirements of the business;

(5) To check invoices on receipt with the Purchase Orders and see that the quantities sent and the prices charged are proper; and

(6) To maintain a classified record of Quotations, Charges, Prices, Sources of Supply, Market Trends, etc.

To enable the purchasing to be carried out efficiently, the head of the Buying Department must have thorough experience of buying in the particular line of industry. He must be most scrupulously honest and must reject with contempt all offers of personal gain.

He must possess a good knowledge of the sources of supply and must know how to avail himself of favourable market conditions. He must make a close study of the various competing supply houses in regard to their capacity for supplies, terms of delivery, quality of materials and efficiency of service.

He must have a working knowledge of the manufacturing processes and needs of his concern so as to be able to anticipate what would be wanted and when. He must work in full co-operation with the production and stores departments so as to know their wants.

He must be fully capable of organising and managing his department most efficiently and economically. He must maintain a proper classified record of all purchase contracts, and note all the supplies actually received against each, from time to time.

Q. 38. What considerations should weigh with the Chief Buyer in his selection of supplies ?

A. The following considerations would guide the Chief Buyer while selecting a firm of suppliers:

(1) The financial standing and reputation of the firm of suppliers;
(2) Courtesy and prompt attention to orders;
(3) Uniformity of quality supplied;
(4) Low charges of goods supplied;
(5) Low transportation charges;
(6) Deliveries as promised;
(7) Least number of rejections of supplies; and
(8) Terms of payment and discounts offered.

Q. 39. Would you advise centralised or localised purchasing in a manufacturing concern operating several distinct works ?

A. Local Purchasing by the different works may be advisable—
(*a*) Where materials and supplies are required promptly;
(*b*) If better terms can be secured locally;
(*c*) Where the purchases involved are of small value; or
(*d*) Where it is desired to build up local connections.

Centralised Purchasing, however, offers the following advantages—
(*a*) Where the purchasing is on an elaborate scale, a better control would be ensured by maintaining a centralised purchase office;
(*b*) A more reliable and efficient system of inspection, tests and checking of goods on arrival can be secured;
(*c*) The concentration of purchasing would admit of the employment of highly specialised buyers who can study the trends of the markets and avail themselves of most favourable opportunities for purchasing;
(*d*) The buying being in larger quantities, more advantageous rates can be obtained from suppliers;
(*e*) The necessary materials in stock can be better controlled;
(*f*) Obsolete and slow-moving stores may be more efficiently dealt with;
(*g*) A good deal of clerical labour and saving in time and efforts can be effected;
(*h*) A ready standardisation of materials and parts can be effected;
(*i*) A closer co-operation between the finance and purchasing departments can be achieved;
(*j*) Better control can be maintained over deliveries; and
(*k*) An all-round efficient and more economic buying can be effected.

As much will depend on the actual facts relating to each particular case, the whole of the circumstances must be carefully reviewed before arriv *ing at a decision in this matter. The location of the different works and their nearness or otherwise from the sources of supplies will also be an important factor in coming to a decision.*

Q. 40. State what records and statistical information should be maintained by the Buying Office.

A. In order to keep itself well-informed on all matters relating to the firm's requirements of supplies, the Buying Office would need to maintain systematic records in regard to the following:

(1) Sources of supplies duly indexed indicating the names of suppliers, the class of goods dealt in and the quotations received from time to time;

(2) A summarised classified record of all purchases made from time to time with names of suppliers and prices charged, and remarks as to quality and deliveries;

(3) Average monthly consumption of materials and the minimum quantity of each required for stock;

(4) The quantity of material required for orders on hand;

(5) Average time taken up between order and receipt of goods;

(6) Comparative monthly purchases with those of preceding years;

(7) List of firms who have failed to deliver in time or whose goods had to be rejected;

(8) Up-to-date list of firms under contract for supplies showing full details of their dealings;

(9) Analytical summary of goods on order, received and outstanding; and

(10) Detailed list of obsolete or deteriorated stock.

Q. 41. Explain clearly the difference between " Stores " and " Stock ".

A. The term " Stores " is employed to represent raw materials used in production as also indirect materials and general supplies such as lubricants, cotton waste, beltings, etc., maintained in store rooms for issue to productive and service departments as and when needed.

The word " Stock " usually indicates finished products in a saleable condition held in the factory until disposed of by sale. It also includes completed or partly completed components set aside for assembling or further treatment.

Separate accounts must be maintained for each item of stores in the Stores Ledger or Stores Record Cards. Similarly, detailed records of each item of Finished Goods should be kept in the Stock Ledger or Finished Goods Ledger.

Q. 42. Describe the system usually adopted for ordering materials, checking the receipt thereof, and passing the relative payment.

A. (1) All purchases are based on properly authorised requisitions issued either by the Planning Department, the Works Manager or each Departmental Head, as the case may be, stating the purpose for which the goods are required. The Buying Department on receipt of such Purchase Requisitions will issue Purchase Orders to the suppliers, made out in triplicate. One copy is sent to the supplier, one is retained by the Buying Office, and the third one is passed on to the Department requisitioning the goods, for reference and information. On receipt of acknowledgment of the order together with the price and delivery date, the department interested is informed accordingly.

(2) On arrival of the goods, these would actually be counted or weighed by the Receiving Department and then entered in Goods Received Notes in duplicate.

(3) Where necessary, the goods would be inspected to ensure that they are of standard quality and that they comply with any specifications contained on the Purchase Order. All materials passed as in order on inspection will be stamped as such.

(4) On any goods being rejected, the Inspection Department will make out a Rejection Note which will be passed on to the Buying Office for Debit Notes to be prepared and sent to the suppliers concerned.

(5) In order to secure an independent check on the goods received, the original Invoice will be kept and examined by the Buying Office to ensure that the supplies are as per the order and that the prices charged are fair. The Receiving Department will thus write out the Goods Received Notes from the actual goods without reference to the Invoices.

(6) The Goods Received Notes, containing full particulars of the goods received from time to time, will be passed on to the Cost Office. The relative Invoices will also be sent by the Buying Office to the Cost Office. The latter will then check the items from the Goods Received Notes into the corresponding Invoices, at the same time entering references as to Invoices and filling in the values against each item in the Goods Received Notes.

(7) Whereas the Receiving Department (Stores Office) will enter up the Bin Cards in quantities only from their copy of the Goods Received Notes, the Stores Accountant attached to the Cost Office will enter direct from the Invoices, the quantity and value of each item received, in its relative account in the Stores Ledger or Stores Record Card.

(8) The Invoices and the Rejection Notes, if any, will be passed on to the Accounts Department for necessary credits and debits to the suppliers concerned.

(9) The Invoices being checked as to rates, calculations, etc., and duly stamped indicating the nature of the checking done by the Accounts Department, will be passed on for payment, after the statement of account from the suppliers is checked and the payment is duly authorised.

(10) The Purchase Requisitions, the Purchase Orders, the Goods Received Notes and the Purchase Invoices will all bear reference to each other, and will be properly filed so that ready access can be had to any of these whenever desired.

(11) The Inspection Department will issue periodical Reports on Rejections giving details of items rejected and the reasons why they were rejected, for the information of the Buying Office and the Works Manager.

Q. 43. Give a brief outline of the regulations you would suggest for a close control over the quantities of Raw Materials and Consumable Stores with the Store-keeper.

A. For a rigid control over the store-rooms, the following rules would need to be strictly enforced:

(1) The chief store-keeper should be made solely responsible for the receipt, issue and balance of stores in hand;

(2) Maximum and minimum quantities of each item of stores should be fixed, and it would be the store-keeper's duty to see that these are maintained;

(3) All orders for replenishments from the Store-keeper should be in writing;

(4) No item should be issued from the stores without receipt of a written Stores Issue Requisition duly signed by the department or the foreman requisitioning;

(5) The store-keeper should be responsible for the accurate record of Bin Cards;

(6) It would also be his duty to reduce breakages and wastes resulting from issues from bulks to their minimum;

(7)) There should be a strict control to avoid pilferages;

(8) The store-keeper should fully co-operate with and render all help to Bin Inspectors, and should carefully fill in all Goods Received Notes;

(9) All items of stores should be identified either by a number or symbol so as to facilitate reference;

(10) *Raw material should be stored as near the place of consumption as possible;*

(11) The store-rooms should be tidy, and must present an orderly appearance;

(12) There should be a proper classification and arrangement of stores as to render quick and easy issues possible;

(13) All material should be thoroughly inspected and checked on receipt so as to detect any flaws in quality and ensure that the right quantities are received and entered;

(14) There should be a system of continuous checking of stores by actual count to ascertain that the quantities on hand tally with those shown by the Stores Records. Such verifications must be done by persons who have nothing to do with the store-keeping and who are independent of the chief store-keeper. All unusual differences detected on checking should be duly reported and investigated;

(15) The location of the store-rooms and the whole lay-out of the stores should be well-planned and duly determined according to the nature of the business and the class and quantity of materials dealt in; and

(16) Only persons having any business with the Stores Department should be allowed to enter the store-rooms.

Q. 44. What method of Stores Record would you suggest so as to ensure an adequate check on the receipt and issue of materials ?

A. To ensure a complete and effective check on the receipt and issue of materials, the following records are necessary:

1. Record by the Stores Department—

All goods received would first be entered in the Goods Received Notes with full details as to class or type of materials, and the quantities received would also be entered on the Bin Cards as soon as the items are placed in their respective Bins or Racks. These would then be passed on to the Stores Accountant attached to the Cost Office for further checking and record.

All issues from Stores would be represented by Stores Issues Requisitions which in their turn would be numbered consecutively and entered on their respective Bin Cards.

The entries on the Goods Received Notes and the Bin Cards by the Stores Department would relate only to quantities and not values.

Materials returned to Stores will be represented by Stores Returned Notes which will be numbered serially and entered on the respective Bin Cards. Materials transferred from job to job, or process to process and evidenced by Material Transfer Notes will not be entered on the Bin Cards, but will be transferred to the Cost Office for further treatment.

2. Record by the Cost Office—

The Purchase Invoices from the suppliers being checked on receipt as to comparison with orders, prices charged, extensions and additions, will be passed on to the Stores Accountant in the Cost Office for further checking with the entries in the Goods Received Notes, and for filling up the values against the respective items.

The Stores Accountant must also maintain either a Stores Ledger or Stores Record Cards in which separate accounts would be maintained of each different item of material or consumable supplies. This record will include quantities and values. The record in the Stores Ledger or Stores Record Cards will consist of debits to each relative account with quantities and values received from suppliers or returned from jobs, and the credits for issues to the jobs. The difference in the quantity columns on the debit and credit sides of each account would represent the balance quantity on hand, and this will be extended in the Balance Column periodically.

3. Checking of Balance Quantities on Hand—

This will be effected by—

(*a*) Constant verification of actual contents of Bin Cards by inspectors independent of the Stores Office, the results being recorded on Bin Inspection Cards.

(*b*) Continuous checking of quantities as shown by the Bin Cards with their relative Stores Ledger Accounts or Stores Record Cards.

(*c*) Periodical agreement of the total values of stores issued as ascertained from the Stores Issued Book with the Stores Issued Analysis or Abstract for the same period indicating the stores issued and charged out to the several jobs or departments.

The Perpetual Inventory System would generally avoid the necessity of actual Stock-taking at the end of each financial period.

Q. 45. Explain clearly how Goods Received Notes (or Sheets) are entered up, and to what purposes they are utilised.

A. Goods Received Notes or Sheets are written up by the Store-keeping Department, and therein are enterd up the full particulars as to quantities of materials and stores received by them from day to day. These are numbered serially and prepared in triplicate, one copy being retained by the store-keeper. The second copy is forwarded to the Stores Accountant, and the third to the Buying Office to enable them to compare the quantities actually received and the prices charged with the Purchase Orders, and to ascertain how far the deliveries are made to time.

They are usually made on loose sheets, and contain the date of receipt, supplier's name, class of package, number of packages, description of material, quantity or weight received, and the Bin Card Nos. in which they are stored. *The store-keeper will certify these as to the goods having been received by him in good order. Where necessary, the quality of the goods* will be certified by the Inspection Staff, if in order. Where the goods are found defective, the Buying Office will be duly informed as to whether they should be rejected or a rebate should be asked for.

The Buying Office will send the original Invoices to the Stores Accountant whose duty it would be to compare the quantities as shown in the Goods Received Sheets with those in the corresponding Invoices. The latter will then enter up the value column against each item in the Goods Received Sheets from the prices as charged in the Invoices, and make the necessary entries in the Stores Record Cards as to quantities and values received.

Thus, whereas the Store-keeper will write up the Goods Received Sheets independently from the actual quantities received by him without reference to the original Invoices which are not sent to him, the Stores Accountant will examine these with the original Invoices and then enter up the quantities received in his Stores Record Cards with their corresponding prices. The Bin Cards written up by the Stores Department contain only the quantity record, whereas the Stores Record Cards show the quantities as well as the prices.

Q. 46. State the routine usually followed in connection with Stores Issue Requisitions.

A. (1) As a rule, no materials are issued from Stores without a written Requisition signed by some person duly authorised. Where a Planning Department exists, all Material Issue Requisitions are issued by this Department. In other cases, the departmental manager or the chief foreman of each section requisitions materials required for his department or section.

(2) On receipt of such a Requisition, the goods mentioned therein are issued by the Stores Department, and the signature of the recipient is obtained thereon. Where the Requisition is accompanied by a Bill of Material, or contains any reference thereto, the store-keeper would compare the quantity mentioned in the Bill with that in the Requisition. If the material requisitioned is in excess of what is specified in the Bill, the store-keeper would ask for an explanation or sanction from the Planning Department or the Works Manager, before making any issue.

(3) After issue, the store-keeper enters the contents of the Requisition on the relative Bin Cards in quantities only, entering the Bin Card numbers on the Requisition.

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Q. 47. Give rulings of the following :—

(a) Goods Received Note ; and

(b) Stores Record Card.

A.

(a) GOODS RECEIVED NOTE OR SHEET

Serial No.

Class of Package

Date of Receipt ....

No. of Packages

Packages Marked ....

Supplier's Name	Description of goods	Rail or Delivery	Quantity					Bin Card No.	Invoice No.	Date of Invoice	Rate	Amount			Stores Ledger Folio
			No.	Weight			Dimensions								
				Cwt.	Qrs.	Lbs.						Rs.	a.	p.	

Inspected and Passed

Signature ....
Chief Store-keeper.

....
Inspector.

Received into Stores

Signature..........
Stores Clerk.

Note:—The last five columns will be filled in by the Stores Accountant, or the Buying Office.

(b) STORES RECORD CARD

Type of Material .... Maximum .... Usual Source of Supply ....

Grade of Material .... Minimum .... Usual Terms of Delivery ....

Bin No. .... Code or Symbol .... Location ....

Date	Received						Issued						Balance				Stock Checked		
	Invoice No.	Supplier	Quantity		Rate	Amount	Date	Issue Reqn. No.	Quantity		Rate	Amount	Quantity		Rate	Amount	Date Checked	Initials	Remarks
			No.	Weight					No.	Weight			No.	Weight					

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(4) The Requisitions received during the day will be numbered consecutively and passed on to the Cost Office.

(5) The Cost Office will then fill in the values against the respective items in the Requisitions from the relative Stores Ledger Accounts or Stores Record Cards, and enter the total value of each Requisition serially on a Stores Issued Book.

(6) The contents of each Requisition having been credited to the appropriate Stores Ledger Accounts, the former will now be sorted out according to the job numbers for which the materials were issued.

(7) A Materials Abstract will then be compiled collecting all the Requisitions for each separate job in a different column. This will give the total weekly or monthly value of materials issued on account of each job.

(8) Each Job Account in the Job Cost Ledger will then be debited with its relative weekly or monthly total of Direct Material Issue.

(9) There should be a separate Issue Requisition for each job.

(10) Issue Requisitions for Indirect Materials must be printed in a distinctly different form or on a different coloured paper so as to distinguish them from Direct Material Issue Requisitions.

(11) The Issue Requisitions for Indirect Material will also be analysed in a similar manner weekly or monthly, and the total value of such issues for each distinct indirect service or auxiliary work having been ascertained, will be debited to its appropriate account.

(12) All Issue Requisitions must then be properly filed so as to facilitate reference.

Q. 48. Give Specimen Rulings of the following :—

(a) Bin Card ; and

(b) Material Issue Requisition.

(a) BIN CARD

Bin No.......................... Minimum Quantity..

Article.......................... Maximum Quantity..

Date	Quantity received	Quantity issued	Balance	Date	Quantity received	Quantity issued	Balance	Date	Quantity received	Quantity issued	Balance

Checked by ....Date..Date ....

Actual count .... Initials .... Initials ....

(b) MATERIAL ISSUE REQUISITION

Date .... No. ....

To

The Store-keeper,

Please issue the undermentioned goods for Job No. ....

Quantity					Description of items required	Rate	Amount			Entered on Store Cards by
		Weight								
Dimensions	No.	cwt.	qrs.	lbs.			Rs.	a.	p.	

Signature ....

Materials issued by	Received by	Cost Department Entered in Materials Issue Analysis by
....	....	....

Q. 49. State what different types of Issue Requisitions are generally used to distinguish the different purposes for which the raw materials and indirect supplies are utilised.

A. A vital point in connection with the Issue Requisitions is to ensure that the issues for different purposes are clearly distinguished one from the other by the use of different coloured paper, or by printing in different coloured inks so as to obviate all chances of errors. There will thus be distinct types of Requisitions for the following:

(1) For supplies of Direct Materials used on Works Orders or Stock Orders, as these will form part of the Prime Costs;

(2) For supplies of Direct Materials required for Capital Outlay such as erection of new buildings or plant, manufacture of costly tools, patterns, or other equipment, or extension or improvement to any existing structure or plant. These will be charged to the cost of the asset accounts concerned;

(3) For supplies of Direct Materials to replace the original quantities issued in case of spoilt work and chargeable to " Defective Work Account ";

(4) For supplies of Indirect Material for repairs and maintenance to Works Buildings, Plant, Tools or other Equipment, as also consumable stores such as beltings, oils, brushes, lubricants, cotton waste, etc., issued to different Departments or services, and chargeable to Works Expenses;

(5) For supplies of Indirect Material for any of the purposes of capital outlay as mentioned in (2) above; and

(6) For supplies of Indirect Material chargeable to administrative and selling oncosts.

Q. 50. Mention the advantages of the Perpetual Inventory and Stock-taking System.

A. In large manufacturing concerns, a method of stores inspection is followed throughout the year by means of continuous checking of the perpetual inventory records as provided by Bin Cards and Stores Ledgers or Stores Record Cards. The results of such verification are recorded on Bin Inspection Cards. Such a system usually dispenses with the necessity of Stock-taking at the end of the financial period and serves to maintain a much better control on the large amounts of stores on hand. Under this method, the contents of several Bins or Racks are actually counted or weighed each day by a staff employed specially for the purpose, and the actual quantities on hand as ascertained on count are compared with the Bin Cards or Stores Record Cards. All discrepancies, irregularities or shortages thus brought to light are immediately adjusted and periodically reported to the Works Manager.

The advantages of a system of continuous stock-taking may thus be summed up:

(1) As counting and listing are not carried on under pressure, the system ensures a detailed and reliable checking of the stores items in a methodical manner without in any way interfering with the routine work of the factory;

(2) It obviates the necessity of stock-taking by actual count at the end of each financial period;

(3) It helps towards detection and immediate rectification of clerical errors and other discrepancies;

(4) In case of serious shortages, it gives rise to thorough inquiries and investigation into the causes, and prevents recurrence of similar irregularities;

(5) While ensuring greater accuracy in the stores records, it serves as a considerable moral check, acts as a deterrent to dishonesty upon those handling stores, and reduces wastage due to careless handling or pilferage to a minimum;

(6) It brings to light any serious divergence from the predetermined maximum and minimum stock levels;

(7) It reveals deteriorated or obsolete stock, and ensures earlier stock being first issued to production; and

(8) Interim accounts can be compiled without recourse to stock-taking, as the exact quantity and value of the stock of finished goods and stores on hand can be obtained at any time by listing the balances as shown by the Stores Record Cards.

Q. 51. Describe the advantages accruing from efficient store-keeping and store-recording.

A. Among the varied advantages of efficient store-keeping and store-recording may be mentioned the following:

(1) A proper classification, arrangement and record of stores would facilitate the handling thereof to a considerable extent;

(2) All wastage, intentional and unintentional, as well as theft, pilferings and leakages would be reduced to their minimum;

(3) Unnecessary congestion and confusion with consequent delays would be avoided;

(4) Reliable records of quantities and values consumed periodically would be available for ascertainment of prompt costs;

(5) Regular record of receipts and issues will render easy the ascertainment of stock on hand at any time without actual stock-taking;

(6) The Planning Department as also the Buying Office would be helped considerably in ensuring a regular flow of materials and stores to the productive and other departments;

(7) With an accurate record of all issues, every item issued would be readily traced to its proper job, department, process or other cost unit so as to ensure correct costing;

(8) Delays due to lack of materials would be avoided, on the one hand, and over-stocking would be prevented, on the other; and

(9) Perpetual inventory of stock would be greatly helped by means of constant checking, and all errors and wastages would be immediately disclosed and set right.

Q. 52. Mention briefly the duties of the Stores Accountant attached to the Cost Office.

A. Ordinarily, the duties of the Stores Accountant would consist of the following:

(1) Maintenance of Stores Record Cards containing full details as to each item of stores with regard to—
  (*a*) Quantity and value of goods received;
  (*b*) Quantity and value of goods requisitioned and issued; and
  (*c*) Balance quantity on hand.

(2) Pricing all the Goods Received Sheets as received from the Store-keeper from the original Invoices, and comparing the relative quantities;

(3) Valuing all the Stores Issue Requisitions from his Stores Record Cards;

(4) Posting particulars of all goods received as shown by the Goods Received Sheets to the debit of the accounts in the Stores Record Cards;

(5) Posting particulars of all issues as per Stores Issue Requisitions to the credit of the accounts in the Stores Record Cards;

(6) Valuing and posting particulars from Stores Returned Notes and Stores Transfer Notes to the respective accounts in the Stores Record Cards;

(7) Checking and comparing the quantities of items as per Stores Record Cards with the quantities on hand by actual count, and also with the Bin Cards, at frequent intervals; and

(8) Compiling Material Abstracts and comparing same with Material Issue Analysis, if prepared by the Stores Department.

Q. 53. Explain why it is necessary for the Accounts of Materials and Stores to be maintained by the Stores Accountant independently from the Store-keeper's Records.

A. Experience has shown that it is desirable to eliminate from the Stores Department all clerical work necessarily involved in the accounting of materials and stores. This work is thus entrusted to the Stores Accountant attached to the Cost Department who is free from the handling of goods. Being thus detached from the Stores Department, he is thus apt to make cleaner and more accurate records in less time, and will be able to secure an efficient check on the incomings and outgoings of the stores.

The clerical duties to be performed by the Stores Department would be restricted to writing up of Purchase Requisitions, completing foremen's Requisitions for Issues, entering up Goods Received Sheets and filling in the Bin Cards.

In order to ensure a good check on the actual receipt of stores, it is desirable not to send the original Invoices to the Store-keeper. He should be

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Q. 54. Give Specimen Forms of :—

(a) Materials Returned Note ; and
(b) Materials Transfer Note.

A.

(a) MATERIALS RETURNED NOTE

To Store-keeper,

From Dept. Works Order No. Date

Please receive the undernoted material.

Signature .
(Foreman)

Description of Material	Reason for return	Quantity	Rate	Value	Posting Reference	Bin Card No.	Remarks

Received

Date

Signature .
(Store-keeper)

Remarks

(b) MATERIALS TRANSFER NOTE

From Dept. . . . . To Dept. . . ..

Works Order No. . . . . Date................ . ...

Please receive the following material.

Signature .. . . . .
(Foreman)

Description of Material	Quantity	Rate	Value	Posting Reference	Remarks

Received the above.

Signature

Foreman Dept. No. . ...

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asked to enter up Goods Received Sheets independently as and when the goods are received and counted by his department. The checking of the Invoices with the Purchase Orders should be left to the Buying Office and the checking and pricing up of the Goods Received Sheets with the Invoices should be entrusted to the Stores Accountant. Such a procedure will undoubtedly result in enormous benefits being secured by way of safeguarding against pilfering and controlling waste, and in definitely ascertaining that all goods paid for have been duly received.

Q. 55. Mention the different causes which create differences in Stores as revealed by perpetual inspection. State also how Stores Discrepancies are dealt with in Costs.

A. The differences in stock of stores as usually revealed by perpetual inventory may be divided in (1) Avoidable Differences, and (2) Unavoidable Differences.

(1) **Avoidable Differences** would arise from—

(*a*) Pilferages;
(*b*) Omission in recording receipts or issues;
(*c*) Wrong pricing of Issue Requisitions or Material Returned Notes;
(*d*) Errors in entering quantities on the Bin Cards or Stores Record Cards;
(*e*) Errors in calculations or extracting balances; and
(*f*) Breakages and Wastage due to careless handling.

(2) **Unavoidable Differences** would result from—

(*a*) Evaporation or Absorption of moisture;
(*b*) Wastage due to small quantities being issued out from bulk;
(*c*) Deterioration of perishable goods; and
(*d*) Valuation being made at prices other than cost.

Stores Deficit or Difference should be recovered from cost units either as an item of indirect expense, or by charging out the materials which are subject to such wastage at a slightly inflated price as would cover this loss.

Q. 56. What system would you lay down in regard to Stores Organisation as would ensure sufficient quantities of materials, spare parts and tools always on hand, so that the production work may not be hampered for want of these, and at the same time, unnecessary capital may not be tied up in excessive stocks ?

A. In order to ensure a continuous flow of production without any delay due to want of materials, the first essential thing would be to plan production programme in advance and prepare material specifications much before the work is taken in hand.

Similarly, excepting in case of standard products, the Production Order or the specifications accompanying it must detail the tools required for each particular Job.

An advance copy of such Bill of Material and List of Tools would be forwarded to the Stores and Tools Departments respectively. The Stores Department will then appropriate and get ready the materials needed for the purpose, and such materials as are not on hand will be immediately placed on order. The Tools Department will also get the required tools ready for the machines. If any special tools are required, the same will immediately be taken in hand for manufacture, or ordered out.

For such materials and stores as are constantly in demand, maximum and minimum stock levels should be fixed, and it would be the duty of the Store-keeper to issue a Purchase Requisition for replenishment as soon as the stock of any particular item reaches the minimum level.

In order to maintain a close control on the Purchases, and in order to avoid duplication of Purchase Orders and unnecessary locking up of capital, all purchases should be made through the Purchasing Department, and the authority to issue Purchase Requisitions should be strictly defined and limited to certain responsible executives.

In order to ensure that slow-moving stocks are not purchased in advance much in excess of their requirements, and unnecessary surplus stocks are not allowed to accumulate, it should be seen at periodical intervals that the maximum quantities fixed in their case are not exceeded.

It is always a good plan to review the Stores Ledger Balances periodically to ascertain the rate of turnover of each item of material. This will serve to disclose how far the regulations in respect of the minimum and the maximum limits are respected, and whether there is need to modify any such levels.

An equally careful and constant watch must be maintained on the spare parts, which are usually bought from outside, to see that they are kept well within predetermined levels and that slow-moving stocks are not allowed to get obsolete.

Where the manufacture consists of mass production, it is always desirable to standardize material and tool requirements as much as possible, in order to secure efficient and economic production.

Q. 57. Draft a Specimen Form of a Purchase Order with its corresponding Office Copy.

A.

PURCHASE ORDER

Telegrams ....

Codes used

Serial No.

Reqn. No.

W. O. No.

Date

From

The Blank Mfg. Co. Ltd.

Bombay.

To

Messrs.

Please supply the following in accordance with Terms and Conditions stated on the back hereof, and deliver the same to our Works, Carriage per.

Item No.	Quantity	Description of Goods	Rate	Amount

Signature

(Buying Dept. Chief)

PURCHASE ORDER

DUPLICATE

(Office Copy)

Serial No.

Reqn. No.

W. O. No.

To

Date

Messrs.

Date Order Accepted	Date of Arrival	Goods checked with Order	Invoices Checked & Passed	Remarks

Item No.	Quantity	Description of Goods	Rate	Amount

Note:—Columns for any additional information may be added here as this copy is intended for office use.

Q. 58. Discuss the different methods employed for charging out materials to the Jobs or Production Units for costing purposes.

A. The several methods employed in the pricing of Material Issue Requisitions are:

(*a*) At Cost Price, on the basis of first-in, first-out;

(*b*) Average Purchase Price; and

(*c*) Market Price ruling at the time of manufacture.

The usual method is to charge materials out at actual cost, such cost being calculated on the assumption that the earliest purchases are used first.

Another method is of ascertaining the average price of the materials in stock from time to time and charge out the issues at such average price. This method would, however, need adjustment after each fresh receipt of material, or periodically, say weekly or monthly. It, no doubt, tends to even out wide fluctuations in the purchase price, but must necessarily involve too much clerical work and complicated calculations. Bearing in mind, however, that the object of Costing is to record the actual cost and not to estimate it, the averaging of the purchase price should not be resorted to as far as possible, as it will fail to give the true material cost.

In some cases, the practice is to charge out materials at the current market price. Such price at the date of issue may have fluctuated considerably as compared to the purchase price. This method, while enabling the management to test the efficiency of the Estimating Department, inasmuch as the latter is assumed to bring into review the prospective future fluctuations in the market price, will fail to indicate the true cost at which any particular Job is done, but will serve to provide information as to what the cost would have been if all materials were purchased as and when required. Besides, if the stores are charged out at prices other than the cost, the stores account will show profit or loss, and this will tend to render the agreement between the Cost Accounts and the Financial Accounts more difficult and complicated. Another argument that can be adduced against the charging out of stores at the current market prices is that Cost Accounts should not be made to include the profit or loss as may arise from the efficiency or otherwise of the Buying Department. In all circumstances, therefore, it seems desirable that the issues of materials must be charged out to the Jobs at actual cost.

There is a wide divergence of opinion as to the best method to be utilised for such purpose, but in any case the proper method should be the one which does not detract in any way from the usefulness of the costs.

Q. 59. State from what vouchers or records complete information would be obtained for charging Direct Materials to the several Job Accounts.

A. The following vouchers or records will serve to give information regarding Direct Materials chargeable to the different cost units:

(*a*) Material Issue Requisitions for issues from Stores;

(*b*) Purchase Invoices or Purchases Journal for materials specifically purchased for any Works Order and which have not entered the Store-rooms;

(*c*) Material Specifications issued with Works Orders;

(*d*) Scrapped Material Register;

(*e*) Material Returned and Material Transfer Notes;

(*f*) Bin Cards and Stock Record Cards;

(*g*) Bin Inspection Cards; and

(*h*) Materials Issued Analysis or Abstract.

Q. 60. When called upon to investigate into the adequacy of the system of Internal Check in relation to the purchases of Raw Materials and Consumable Stores and their issues to the jobs or departments, to what main points would you direct your attention ?

A. In regard to the investigation of a system of Internal Check that may exist in the concern in connection with the incomings and issues of materials, the inquiries must relate to the ascertainment of the following facts:

(*a*) As to who authorises the purchases, and how the materials are ordered out;

(*b*) What system of check there is in regard to the verification of the goods actually received from time to time;

(*c*) How the Inward Invoices are checked on receipt in regard to the quantities and prices;

(*d*) Whether the entering up of the Goods Received Notes by the Chief Store-keeper is made independently without any reference to the corresponding Invoices;

(*e*) What system exists in regard to inspection of raw materials as to their suitability and uniformity, and how the rejected articles are dealt with;

(*f*) What system there is in regard to the use of Materials Issue Requisitions;

(*g*) What check there is on the pricing of Goods Received Notes and Issue Requisitions as carried out by the Stores Accountant;

(*h*) Whether there is a system of continuous checking of actual quantities of stock with the relative Bin Cards, and the checking of the quantities as shown by the latter with the corresponding Stores Record Cards;

(*i*) On what basis are the materials issued to the Departments or Jobs priced;

(*j*) The method of passing Invoices for payment; and

(*k*) Whether the total Direct Material Issues for each period as indicated by the Material Issue Analysis is reconciled with the amount as ascertained from the Financial Records.

Q. 61. State the steps you would take to satisfy yourself in regard to the correctness of the Direct Material Issues charged to the different Departments or Jobs concerned.

A. A detailed and sufficiently comprehensive check as to the accuracy of the Direct Materials charged to the several Jobs or Departments will involve the following:

(*a*) A comparison of a few Material Specifications with the relative Works or Stock Orders to ascertain how far the materials actually issued out and charged thereto as shown by the Cost Accounts compare with the quantities mentioned in the Specifications;

(*b*) Checking of a good number of Material Issue Requisitions into the Materials Issued Summary;

(*c*) Checking of the periodical totals from the Materials Issued Summary or Material Abstracts with the debits to the relevant Works Order Accounts in the Job Cost Ledger or the Cost Sheets;

(*d*) A detailed examination of some of the Materials Issue Requisitions to ensure that—

  (1) The Requisitions are properly dated and signify the relative Departments or Works Order Numbers;

  (2) The quantities and values are properly entered;

  (3) The relevant Bin and Stock Card Numbers are entered thereon; and

  (4) Each such Requisition is duly authorised and signed;

(*e*) Checking the pricing of some important items of Material Issues to ascertain that a correct and consistent method is followed in relation thereto;

(*f*) A test check of some of the transactions relating to Returns of Materials to Stores and Transfers of Materials from one job to another;

(*g*) A test check of some of the quantity balances as shown by the Stores Record Cards with their corresponding Bin Cards;

(*h*) A general inquiry into how scrapped material and spoilt work have been dealt with; and (*i*) An agreement of the total issue of Direct Materials charged to the Cost Accounts for the period with the total issues for the same period as disclosed by the Financial Records.

Q. 62. What system would you suggest for the transfer of surplus materials from one job to another? How would excessive use of materials on any job be traced?

A. It is always advisable not to allow transfers of surplus materials direct from one job to another, in order to avoid any possibility of such transfers being left unrecorded and the consequent wrong and misleading results being shown by the respective Cost Accounts. The more desirable method is to return all such excess materials to stores rooms, through the Materials Returned Notes.

Where, however, the return of the excess materials to the stores and their subsequent dispatch to some other job would involve additional expense of stores handling, there should be a rule to be rigidly followed that all such transfers should be accompanied by a Material Transfer Note to be made out by the foreman of the job issuing such materials and to be signed by the foreman of the receiving job. On all such Transfer Notes being passed on to the Cost Department, the account of the Job transferring the materials will be given the credit, and that of the Job receiving the materials, the debit.

The Materials Transfer Notes must contain full details as to the date of transfer, the quantity and quality of the materials transferred, and the numbers of the jobs transferring and receiving the goods.

Another objection to allowing direct transfers from one Job to another would be that the absence of any check on the foremen receiving excessive materials would tend to induce slackness on their part with consequent waste of materials.

The following methods of check would always disclose any excessive use of materials:

(*a*) Comparisons of materials actually consumed on Jobs or Processes as shown by the Cost Accounts with their relative Specifications or Bills of Materials; and

(*b*) Comparison of actual material consumption of any Job or Operation with that of similar one previously performed.

CHAPTER IV

LABOUR COST AND WAGE CONTROL

Q. 63. Describe the duties of the Wages Department in a highly organised factory.

A. In a highly organised factory, the Wages Department would work under the control and guidance of the Labour Office, and will have the following duties to perform:

(1) To maintain a classified record of the number of workers employed in each department or section of the works, and the nature of the work performed by each of them;

(2) To ascertain the actual number of hours worked by each worker at the end of each week or month;

(3) To keep a record of the agreed day-rates of each department;

(4) To fix the rates for the different types of piece-work;

(5) To collect data in respect of piece-work done in each department during the week or the month for the preparation of the Wages Sheets;

(6) To prepare Wages Sheets indicating the gross amount due to each worker, and the net amount payable to him after deductions for house rent, advances, fines, insurance, hospital contribution, if any, etc.;

(7) To arrange for the payment of such wages by the cashier at the end of the month, as per the wage voucher prepared for each worker;

(8) To complete the wages sheets showing the wages paid and those unpaid;

(9) To allocate the wages over the various departments or services for the ascertainment of costs;

(10) To work in complete collaboration with the cashier and the costing department; and

(11) To control the entrances and exits to and from the works.

Q. 64. State what points would need careful consideration while devising an efficient system of remunerating labour and the record of wages.

A. The following points would need to be carefully considered while installing an efficient system of remunerating labour and record of wages earned:

(1) Whether the nature of the work would admit of piece-work or premium bonus system to be used to the benefit of both the employer and the employees;

(2) If the overhead expenses are unusually heavy, piece-work or premium bonus system would be preferable to the day-rate basis;

(3) An efficient system of time-keeping and performance records to be devised as would bring to light all wastage of time and efforts;

(4) An efficient method of wage calculation and payment as would ensure the right men being paid the right amount of wages;

(5) A close and careful system of internal check on allocation of direct wages so that each job, process or cost unit gets its legitimate debit in respect thereof;

(6) A system of record and classification as would secure an easy comparison of labour costs with the financial records;

(7) The wage-rates to have due regard to:

  (*a*) The competitive conditions of the industry concerned, and the economic capacity of the business in view;

  (*b*) The class of labour engaged, and the skill, experience and training required for efficient accomplishment of the jobs; and

  (*c*) The cost of living, and the ruling local wage-rate for similar type of labour;

(8) The system must be easy in calculation, must be understood by the workers, and must satisfy them; and

(9) It must ensure adequate reward to each worker according to his capacity, loyalty and efficiency.

Q. 65. Describe carefully the steps necessary for the compilation of accurate Pay-roll and the subsequent payment of Wages with a view to elimination of fraud.

A. The following steps would seem to be necessary for the preparation of the Pay-roll at the end of each week or month, and the subsequent payment of Wages:

(1) The total time provided by the Time-keeper's Book from the time-boards where metal discs are in use, or that punched on the time cards by the mechanical recorder, should be checked off and agreed with the time as indicated by the corresponding Time Sheets, Job Cards or Piece-Work Tickets written up by the workmen themselves and signed by their respective foremen, or with the foremen's summaries;

(2) In case of a large factory, the Pay-roll should consist of loose sheets so that the work may be capable of being distributed amongst the Wage Office Staff, and can thus be performed with greater despatch

than would be possible if the Pay-roll is in the form of a book. Further, it would be desirable to make up the wages of each Department separately as this would help considerably towards the ascertainment and checking of departmental labour cost;

(3) The Pay-roll should comprise details as to each workman's number, time worked, description of work, rate, amount of wages, bonus, total amount payable, deductions (if any), and the net amount payable;

(4) A set of clerks should be engaged to enter up from the Time Sheets or Job Cards, the number of the workmen, the number of hours worked by each of them, the rates of pay and the particulars of any deductions to be made. These should then be checked by some other clerks;

(5) The total amount of wages due to each workman would now be worked out and the Wages Sheets cast by another set of clerks;

(6) These sheets should then be checked by some responsible clerks as to the rates, calculations, and casts;

(7) The Time Sheets or Job Cards of time-workers and the Piece-work Cards would also be sent to the Costing Department in order that the wages chargeable to each job, process or department may be ascertained, and for this purpose, the whole of the wages for the week or the month would be analysed and duly classified;

(8) The total amount of wages for each week or month as ascertained by the Wages Office must necessarily tally with the total of the Wages Analysis Sheets for the corresponding week or the month as prepared by the Costing Department;

(9) Every person concerned in the preparation of the Wages Sheets should put his initials thereon indicating the nature of the work done by him, and these should finally be countersigned as a whole by the Works Manager or some other responsible official;

(10) The total wages of the week or month in question having been made up and checked, one cheque for the whole amount should be drawn. The payment of the wages should be made by the cashier, who should have no hand in the preparation of the Wages Sheets, as described above;

(11) The payment should be made to the men of each department in the presence of their respective foreman, who would also be made to initial the Wages Sheets;

(12) Apart from the foreman of each department witnessing the payment to his own men, some other responsible official, either the Secretary, the Chief Accountant or the Works Manager should also be present at the time of payment and should sign the total wages of

the week or month, as an indication that such wages were duly authorised;

(13) It should be seen that all deductions in respect of Rent, Fines, Advances, etc. are properly made;

(14) All unclaimed wages must be thoroughly looked into, and under no circumstance must the wages of one worker be collected by another;

(15) No person who has had a hand in the preparation of the wages sheets should have anything to do with the payment of wages; and

(16) Any excessive charges for labour in respect of a job or contract should be investigated.

The above procedure and precautions must necessarily minimise the chances of errors being left undetected, or any possibility of fraud. .

Q. 66. Enumerate the different methods of time-keeping and records of performance.

A. With the increasing size of the business and a much larger number of men being employed now in each factory, the old system of time recording by the gate-keeper has been found inefficient, and has had to be dropped; but the system still obtains in small workshops. The use of metal discs or the mechanical clock-recorder has now become common in almost all the works of any importance.

In case of the metal disc method, every worker is provided with a metal disc bearing a number corresponding with his own. All such discs are hung in a numerical order on boards placed outside the time-keeper's office at the entrance of the factory. On entering the factory, each worker would lift from the board his disc bearing his own number, and drop it through a slot into a box placed nearby. From two to five minutes after starting time, this box would be removed and replaced by an empty one in which the late-comers would drop their respective discs. These discs would then be removed from the boxes by the time-keeper and entered by him in his Time Book, a special tick being placed against the late arrivals. The discs left out on the boards would represent the absentees, and would be marked as such in the Time Book. After all the discs in the box have been recorded, they would be hung again in their proper places on the boards. The Time-keeper's record would then be sent to the Wages Clerk for entries into the wages book. This method was found wanting inasmuch as in the absence of any reliable written record of the times each workman entered or left the factory, disputes often arose between the workmen and the time-keeper as to the correctness of the record, for which one had to depend absolutely on the integrity and care of the time-keeper. Besides, experience soon showed that it was easy for any workman to favour his absent co-worker by dropping the latter's disc into the box along with his own, on entering the factory.

The failure of the Metal Disc Method to secure an indisputable and accurate record of workmen's attendance has brought into use Mechanical Time-Recorders which are now coming more and more into favour. Under this method, each workman, on entering the works, takes the Time Card bearing his own number from the rack on one side of the clock where the cards are arranged numerically, and inserts the same through a slot in the Time-Recording Clock, which is installed at the entrance of each section of the factory. The exact time of punching is thus automatically stamped on the Time Card which is then placed in a rack on the other side of the clock.

The times of entering and leaving the works are thus registered upon these cards by the workmen themselves so as to obviate any doubt or dispute. Besides, as the time is punched on the Cards, there is no chance of its being altered in the future.

The number of hours put in by each workman as disclosed by these Time Cards would then be summarised on the cards at the end of each day by the time-keeper.

The Time-cards will provide spaces for ordinary time and overtime in which the appropriate figures would be extended. The wages sheets will show also the overtime wages separately.

Besides the above record of the time put in by each worker, all productive or skilled workers are provided with a Job Card or Time Sheet on which each worker would record his performance from day to day, and will have the same initialled by his foreman as evidence of authenticity. All workers on piece-work basis would similarly be supplied with Piece-work Cards which would be entered up by the workers and initialled by the viewers or inspectors testifying to the quantity and quality of work turned out. In many instances, the Job Cards or Job Tickets are so ruled as to serve the combined purpose of both the time and performance records.

Where the workmen of each section or department of the factory are engaged on the same type of work, separate Time Sheets or Job Cards are not issued to each of them, but the foreman of the Department would maintain a record of daily performance of the men under him and supply the same to the Wages Department for the making up of weekly or monthly wages.

Q. 67. Describe the advantages of the Time-recording Clocks, and state the rules which should be followed for the proper use of such Clocks.

A. The advantages of a Time-recording Clock System may be summed up as under:

(1) As the punching on the Time Cards is made by means of machines each time the worker comes in or goes out, there is no chance for any dispute arising on account of wrong timing;

(2) As the timings are punched and not written or printed on the Cards, it is not possible to make any alteration subsequent to the punching;

(3) The chances for fraud are reduced to a minimum as any worker punching two Cards can easily be detected under any good system of supervision; and

(4) Due to the punching being clean and decipherable, the preparation for the Wages Sheets is considerably facilitated.

The following rules are important in connection with the use of Time-recording Clock:

(1) There should be separate Clocks provided for each section of the works in order to minimize the time spent in clocking "on" and "off";

(2) The Cards should not be made available to the workers till five minutes before the time for entering or leaving the works;

(3) The clocking should be done in the presence of some responsible supervisor, who must watch each workman punching his own card only;

(4) A written permission must be obtained from the foreman by anyone leaving before the usual time, or one working overtime; and

(5) The Clocks should be kept well regulated.

Q. 68. State what precautions you would suggest to control Overtime.

A. As the wages for overtime work are usually fixed at an increase of one quarter to one-half over the usual hourly rate, overtime is generally favoured by workers, and as a result, there is a tendency to slacken the speed of work during the ordinary hours. On the other hand, the payment of overtime adds considerably to the cost of the jobs, and does not work out advantageously for the employer. Evidently, therefore, overtime work should not be resorted to unless there is a pressure of work and the promised jobs cannot be completed in time. A rigid control, however, needs to be exercised to make sure that the workers do not waste their time during the routine hours to find an excuse for working overtime.

The payment for overtime should be shown separately on the time-cards as also on the wages sheets, so that the total amount expended under this head may be ascertained. Besides, for the purposes of costing, it is necessary to watch the overtime wages, for if this item is steadily on the increase, it points out the necessity for either the acquisition of additional plant, or employment of more operatives.

Q. 69. What records and vouchers are utilised for ascertaining the amount of Direct Wages chargeable to the several Job Accounts ?

A. The records and vouchers that would be needed for ascertaining the amount of Direct Wages chargeable to each cost unit will be:

(*a*) Time-keeper's Record or Clock Cards of direct workers;
(*b*) Time Sheets or Job or Operation Cards;
(*c*) Piece-work Cards or Sheets and Piece-work Register;
(*d*) Foremen's Weekly Analysis of work done;
(*e*) Direct Wage Analysis or Wage Abstracts;
(*f*) Scrap Reports disclosing labour expended on scrapped material; and
(*g*) Registers of Overtime and Idle Time.

Q. 70. When required to verify the correctness of the total amount of Direct Wages paid and allocated to the costs for a particular period, what inquiries would you make to satisfy yourself in that behalf ?

A. A careful and exhaustive examination of the Direct Labour paid and allocated must include the following:

(1) A general inquiry into the system of remunerating labour;
(2) An inquiry as to who is responsible for fixing the wage-rates and bonuses;
(3) What system of Internal Check there is in connection with the checking of the time and performance records, and the preparation and payment of wages, and that all the regulations in connection therewith have been strictly adhered to;
(4) Whether the classification and allocation of wages are made on right and consistent basis;
(5) A test check of the timings as shown by the Job Cards, Time Sheets or Wage Tickets with the punchings on the relative Clock Cards;
(6) A comprehensive checking of the wage amounts from the Job Cards or Wage Tickets into the Direct Labour Abstracts;
(7) A similar checking of Piece-work Cards into the Piece-work Register, and from the latter into the Direct Labour Extracts;
(8) A checking of the wages from the Direct Labour Abstracts into the Job Cost Summaries, or the accounts of the Jobs in the Job Cost Ledger;
(9) An inquiry into how the labour expended on spoilt work is recorded;
(10) An inquiry into whether overtime has in all cases been duly authorised;
(11) Ascertainment of how Idle Time has been dealt with;

(12) A scrutiny to ascertain that all deductions in respect of fines, rent, insurance, advances, etc., have been duly made before arriving at the net amount payable in each case;

(13) That all Job or Piece-work Cards, Wage-Tickets, Wages Sheets and Wage Allocations are duly signed by those in authority; and

(14) Where the costing system is linked with the Financial Accounts and is maintained under Double Entry, it should be seen that the Direct Labour of each period as indicated by the Financial Books is all recovered in costs as shown by the Cost Summaries of the same period. In the absence of any such facility for reconciliation, Total or Control Accounts for Direct Wages should be prepared to ascertain the correctness of the figure.

Q. 71. What separate Wage Abstracts are usually prepared to represent labour employed for different purposes ?

A. A clear distinction should be drawn between the Dirert and Indirect Wages for the purposes of costing, for whereas the former would form part of the Prime Cost of each cost unit, the latter would be included in the Works Overhead duly classified under the different types of non-productive services and other auxiliary work performed. The Direct and Indirect labour involved in any work of a capital nature should also be clearly distinguished from other wages, as they are to be treated as capital expenditure and added to the cost of the assets concerned. In any well-organised concern, separate Wages Analysis Sheets would be prepared in respect of the following:

(1) Wages expended on capital additions to Building, Plant or other Equipment;

(2) Direct or Productive Wages for inclusion in the Prime Costs of the products;

(3) Indirect Wages expended on repairs and maintenance of Buildings, Plant and Implements, as also on other auxiliary services, and sundry factory labour forming part of the Works Oncost; and

(4) Indirect Wages forming part of the administrative and selling oncosts.

Q. 72. How would the following affect the production—

(a) The length of working hours ;

(b) Selection of employees without vocational or other tests ;

(c) Overtime ; and

(d) Idle time ?

A. (*a*) **Length of Working Hours.**—The length of working hours must depend on the nature of the industry. Where heavy work is involved, the hours of work should be less than in case of light work. Any injudicious number of hours for each spell would cause excessive fatigue which would result in—

(1) Variations in quantity and quality of work due to boredom and inattention to work;

(2) Sickness and absenteeism;

(3) High Labour Turnover; and

(4) Accidents.

In order to avoid undue over-strain, suitable rest pauses should be introduced within each spell of work which would help to alleviate the ill effects of fatigue. In the absence of any such rest periods other than the usual meal times, production work must necessarily suffer as indicated above. Besides, due to relief from monotony of work and increased contentment on the part of the workers, a better accomplishment in quantity and quality would ensue.

(*b*) **Selection of Employees without Tests.**—Without any proper tests of new entrants in regard to their general intelligence, trade aptitude, character and physical fitness, it would not be possible to find out the right type of workers for the right jobs, and the production work must suffer as a result of a large number of misfits being found at a much later stage. Besides, such vocational and other tests would help in weeding out those who are found to be physically or mentally unfit.

(*c*) **Overtime.**—Ordinarily, in case of emergencies, overtime may help to bring about increased output, and as a temporary means it may serve its purpose. Continuous overtime, however, is not desirable as it adversely affects the production by reducing the hourly output, causing increased spoilage of materials and careless handling of tools and equipment. Constant overtime also results in slackness of supervision and increased liability to accidents.

(*d*) **Idle Time.**—Any Idle Time is obviously lost time, and all avoidable Idle Time must engage the attention of the progress man in each and every department. Avoidable Idle Time may arise from waiting for work, or waiting for instructions, materials or tools. Unavoidable Idle Time may arise from machine breakdown, cessation of power supply, accidents or necessary repair work.

As Idle Time hinders regular flow of work, it is obviously essential for all specifications, drawings, materials, tools and instructions to be readily forthcoming before the production work commences. It is equally important that jobs ahead must be kept ready, and the requisite machines and labour for each must be predetermined in order to obviate delay in the regularity of productive processes.

Q. 73. What do you understand by Labour Turnover? What are the main reasons of high turnover, and what would you suggest to reduce or eliminate this undesirable factor?

A. Labour Turnover represents the ratio of dismissals and leavings during a given period to the average number of workers in employment during the same period. The dismissals may be due to unfitness, irregularity of attendance, or insubordination. The leavings may result from ill-health, dissatisfaction on the part of the workers as to undesirable working conditions, nature of work, inadequacy of wages, or lack of incentives. Unhealthy area or death also accounts for a high turnover. While determining labour turnover, it is always advantageous to draw a distinction between skilled and unskilled labour. A comparison of such turnover from period to period enables those in management to find out if it is on the increase, and puts them to inquiry as to the reasons therefor. Any avoidable deficiencies may then be set right, for it is false economy to allow skilled workers to leave the firm on grounds of grievances which can easily be remedied.

The following methods generally help to reduce high labour turnover:

(1) Devising a more logical method of employee selection by means of vocational or other tests of mental and physical fitness;

(2) Giving uniformly fair, persuasive and sympathetic treatment to all;

(3) Instituting wage systems on the basis of accurate time and motion studies, so that each worker may be paid in due relation to his efforts and efficiency;

(4) Offering suitable incentives by way of training facilities, regularised methods of promotion, security of service, and bonuses for regularity of attendance, loyalty and length of service;

(5) Creation of better working environment and conditions of work such as proper lighting, ventilation, suitable hours of work, rest pauses, absence of noise, right temperature, etc.;

(6) Fostering a spirit of co-operation and goodwill between the executives, subordinates and the workers, and also between workers and workers;

(7) Creation and maintenance of well-organised welfare schemes ;

(8) Attention to workers' grievances without undue delay, and correcting any defects in working conditions as may be disclosed; and

(9) Introduction of a profit-sharing or co-partnership scheme, or group insurance as would secure the workers' attachment to the firm, and thus stabilise the labour force.

Q. 74. Enumerate the several Forms used for booking time to jobs or operations.

A. The forms used for booking time to Jobs, Operations or other Production Units must vary according to the nature of the work, the method of wage payment and the system of costing in use.

The variety of Forms generally employed in this connection may be classified as under:

(1) Separate Time Card and Job Card issued to each worker for a week;

(2) A combined Time Card and Job Card issued to each worker for a week;

(3) One Job Card issued for each WORKS ORDER on which a series of operations performed by different operatives would be recorded;

(4) A combined Job and Machine Running Card issued to each worker to record the nature of the operations performed, the numbers of the machines used and the number of hours each machine was worked;

(5) One Card issued daily to each worker for recording details of the work performed during the day;

(6) Weekly Time Sheets used by operatives attending to several Jobs or Operations during the week showing the nature of the work done and the time expended on each such Job from day to day; and

(7) Piece-work Card for each worker on piece-rate system.

CHAPTER V

METHODS OF REMUNERATING LABOUR

Q. 75. State the advantages and disadvantages of the Day-Wage System to the employer and employee respectively.

A. The Day-Wage System resulting in the payment of a fixed sum by the hour, day or week, without any reference to the output or value of the work done, hardly acts as an incentive to hard work. If a group of workers in a factory are all paid at the same rate of so much per day, fast workers are usually brought down to the level of the average worker, and, as a result, the output must suffer in quantity. Ordinarily, the employees would see no reason for extra efforts when their wages remain constant irrespective of their output.

Where there is a proper selection of employees coupled with good training and supervision, the employer may stand to benefit from increased production. He would, however, stand to lose where there is slow and sluggish accomplishment on the part of the workmen. Strict supervision is thus essential to get really efficient work. Besides, the ascertainment of accurate labour cost of units for the purpose of estimates is not so easy as in the case of piece-work.

The average employee seems to prefer this system as he finds it easy to compute his wages. Besides, he is assured of a definite wage per day irrespective of his efforts. The objections that would, however, be raised by hard and willing workers are, firstly, that efficient workers receive the same wage at the end of the day as the slack ones, and, secondly, that the system lacks in any incentive to improvement in quality or increase in output, as it fails to bear any relation to individual efforts.

The Day-Wage System can be rendered more efficient by a careful classification of workers into certain grades according to their skill, capacity and willingness to work, and by fixing different scales of day-wage in direct relation to their usefulness. A strong incentive in such a case would be an advancement in grade and the consequent increase in Day-Rate with due regard to workers' capacity and interest in the job.

Q. 76. Discuss how the Piece-work System affects the employers.

A. The main advantage to the employers under this system arises from the fact that, if a larger output can be obtained within a stated time, there will be a considerable saving in overhead expenses all of which do not usually vary with the output. It should, however, be seen that the goods are easily marketable, as otherwise over-production may result with its attendant losses.

The method enables costs to be easily computed, and facilitates the estimating of jobs as the piece-rates are known. Another advantage the system claims is that it does not provide for payment of idle time, unless the time wasted arises from default on the part of the management.

The careful use of materials, tools and implements can always be watched by a rigid system of supervision. The quality of the work can always be maintained by a carefully organised inspection system under which no piece-rates would be paid till the jobs have been certified by the inspectors.

The whole benefit of extra wages earned goes, however, to the workers, and the system takes no account of any unduly longer time taken to accomplish a given piece of work, with the result that the employer stands to suffer the additional shop and machine overheads that would be involved in such a circumstance.

Q. 77. Describe the objections often raised by the workmen against payment on Piece-work basis.

A. The objections of the workers on the Piece-work Basis of remuneration are as under:

(1) The wages earned under this system are irregular though easy to calculate;

(2) If they worked hard and earned high wages, the management might resort to rate-cutting, and their earnings for the same amount of efforts would be reduced;

(3) The foreman may resort to favouritism, and there may not be a fair distribution of jobs, where the piece-rates for different types of work vary;

(4) In a flat piece-work system, there is no additional incentive for those with exceptional productive capacity, as the same price is paid for the first and the last jobs worked during the day;

(5) The piece-rates may not have been correctly set; and

(6) There is usually no provision made to compensate the workers for such time when they are ready for work but the jobs are not available due to conditions for which the management is responsible.

Q. 78. What conditions and factors should prevail in order to make the Piece-work System of remunerating labour effective ?

A. The system of payment by results has served as a great incentive to fast and enthusiastic workers as their wages are increased in direct proportion to their respective turnout, and the workers are enabled to earn more than the usual Day-Rate.

The following conditions are essential for the successful working of the Piece-work System:

(1) The system can only be introduced in concerns where recurring tasks are performed, and the nature of the work is such that it can be split up into measurable units;

(2) It can work satisfactorily where a large output of standardised lines of work of a definite quality is continuously required;

(3) The conditions of the work must be made such that the jobs are ready at hand for distribution, and the continuous efforts of the wage-earners are not allowed to suffer for want of proper organisation;

(4) The system of job distribution must be highly regularised and equitable, if good results are to ensue;

(5) The piece-work rate should be fixed on the basis of the quantity of work which can rightly be expected from a worker of average ability. This can be ascertained from past experience and record of similar performance previously done;

(6) If the rate is too high, the management would naturally resort to rate-cutting which would tend to shake the confidence of the workers in the intentions of the management, with resultant inefficiency;

(7) If the rate is too low to remunerate the worker in due proportion to his exertions, it would fail to act as an incentive to best efforts;

(8) The quality of materials must be faultless, and there should be no undue delay in the supply of materials and tools;

(9) The machines must be kept in a state of high efficiency so as to prevent constant break-downs;

(10) For the piece-work basis to be economically sound, there should be a good system of inspection in force to ensure that the standard of quality is not made to suffer and that the amount of spoilt-work is not unduly high;

(11) It should be seen that the machines, tools, and equipment are not roughly handled and the materials are not wasted by the workers in their anxiety to produce more output; and

(12) The system must keep in view the benefit of both the workers and the employers, and must enjoy the fullest confidence of the workers. This is generally achieved by an agreement that there will be no change in the rates fixed, unless occasions arise for a modification of the manufacturing methods of operation. Even under such a circumstance, the desired change may be brought about and put in

force only when a joint committee of management and the workers have agreed upon the same after a full and careful inquiry into the facts.

Q. 79. Explain what is meant by the Premium Bonus System of wage payment. Enumerate further the factors essential for the smooth working of any such system.

A. The complexity of modern manufacturing technique involving high specialisation of efforts and the growing concern of the employers to control their wages cost have given rise to the introduction of several Premium Bonus Schemes which, while stimulating production by the payment of some agreed bonus or premium to the workers if the job is completed in less than the prescribed time, would also allow some benefit of the time saved to the employers.

All Premium Bonus Schemes thus consist in fixing a rate of payment for a definite type of work to be performed in certain quality and quantity within a stated time. If the job is completed in less than the standard time fixed, the worker receives a premium or bonus on a portion of the time saved, on a predetermined basis, in addition to his fixed wages. Most of these schemes are, however, elaborate and highly complicated in their working, and each one is capable of being employed only in specific industries under a certain set of circumstances and conditions.

For the effectual working of any Premium Bonus Scheme, the following conditions are essential:

(1) There should be a careful and exhaustive job analysis and standardisation;

(2) In many cases, Time and Motion Studies would be an essential prerequisite to rate-setting;

(3) The right materials and equipment as also the best methods of performance will have to be determined so as to yield maximum of results with the least efforts and the least possible time;

(4) Regular flow of tools, materials and supplies to the machines, and comfortable operating conditions must receive equal attention;

(5) An important thing is to ensure the willing co-operation of the operatives and the foreman of each section;

(6) The best method of doing the job must first be taught to the workers, and it is only when they have acquired a sufficient practice that the time study should be taken and the time necessary for each piece of work should be established;

(7) It is necessary that the machines, tools and implements should be maintained in the same state of efficiency as obtained at the time of Time and Motion Studies; and

(8) The scheme must be open to revision on the basis of mutual acceptance on the part of employees and employers.

Q. 80. What are the usual objections of the workers to the Premium Bonus Scheme?

A. The usual objections by the workers to the Premium Bonus Plans are:

(1) The computation of their earnings is not understood by them as in the case of piece-work;

(2) If they worked exceptionally hard, the management might be tempted to fix the piece-work rates on the basis of work done under the Premium Bonus Scheme;

(3) There is the usual suspicion that this system is meant by the management to enable the workers to develop their full productive capacity, and the reward is not commensurate with the high skill and increased strain involved;

(4) Continuous efforts at excessive speed would result in over-strain, and will deteriorate their mental and physical capacity;

(5) Where there is not a regular flow of jobs, they will have to waste their time between the job they have performed and the one to be allotted;

(6) That the whole of the benefit derived from time-saving is not enjoyed by them as in the piece-work, as the employers share also in the time saved;

(7) Under the piece-work system, they can slow down their efforts when they feel they have earned sufficiently. In the Premium Bonus System, they must start on the next job as soon as the one in hand is completed;

(8) The Premium Bonus Rates may have been set without a careful time and motion study and analysis of all the influencing factors involved in the proper execution of the work; and

(9) The machinery, tools and equipment may not have been maintained in a required state of efficiency.

Q. 81. Describe the following methods of remunerating labour:

(a) The Halsey System, and

(b) The Rowan System.

A. Both the above systems belong to the Premium Bonus Scheme and include a minimum wage payment on the time basis, if the standard time as fixed is exceeded. The standard in both the cases is easier to achieve than in the case of Task and Bonus Plans, as it is based not on time studies but on previous experience of similar work done.

Under the Halsey System, which is the oldest of its type, a piece of work is given to the worker to be completed in so many hours and the worker is given a certain wage-rate per hour. If he does it in less time, a saving on the estimated wages is secured, and he receives a predetermined premium or bonus equivalent to 30 to 70 per cent upon the time saved, depending upon the difficulty of the task and the value of the time he saves. The premium or bonus rate is calculated on the hourly rate. Where the task is not completed within the time-limit established, the worker will receive his usual rate. It is simple to operate, requires very little clerical work, and enables the workers to calculate their earnings readily. As there are no penalties for failure and as a minimum day wage is guaranteed, it encourages new and slow workers to better efforts. Its main disadvantage is that if the standards are not properly set, quick workers would stand to secure disproportionately excessive earnings.

If a workman is given a job to be completed within 20 hours at the rate of Re. 1 per hour, and on his finishing it in 15 hours, his remuneration will work out as under:

Time allowed = 20 Hours
Time taken = 15 do

Time saved = 5 Hours

Time taken = 15 hours @ Re. 1 per hour = Rs. 15 0 0
Time saved = 5 hours (assuming bonus to be 50%)
Bonus = 2½ hours calculated @
Re. 1 per hour = Rs. 2 8 0

Total wages due to the worker = Rs. 17 8 0

In this case, the employer saves also Rs. 2/8 in Wages.

Under the Rowan System, the worker receives the same percentage of bonus on the time taken as the time saved bears to the standard time.

Taking up the above illustration, the remuneration will work out as under:

Time allowed = 20 Hours
Time taken = 15 Hours

= 5 Hours (i.e. 25% of 20 Hours.)
Time taken = 15 hours @ Re. 1 per hour = Rs. 15 0 0
Bonus = 25% of the time taken = Rs. 3 12 0

Total wages due to the worker = Rs. 18 12 0

Saving by the employer = Re. 1 4 0

In both these cases, as the standard time allowed is based on past performance, there is no inducement for the employer to cut the rates. While the systems give incentive to the employee to increase production, the employer's benefit arises from the savings in wage cost per unit of production, as well as in overhead expenses.

The Rowan System is a British modification of the American Halsey System. It serves to a great extent to offset the weakness of the Halsey System under which the worker sometimes stands to make extravagant earnings. The system, however, is more costly to operate and fails to find favour with the workers, as the computation of wages is rendered more difficult and the plan operates to limit their earnings per hour as the production increases.

Q. 82. State the main difference between the "Premium" and "Task and Bonus" systems of wage payment, and explain fully the working of the Taylor's Differential Piece-rate System.

A. The main difference between the "Premium" and "Task and Bonus" systems lies in the fact that the tasks level involved in the latter is very high and calls for greater skill, and the standard time for performance is set not on the basis of previous experience but on most careful time studies.

The Taylor's Differential Piece-Rate Plan does not guarantee a daily rate of wages. Under this system, two piece-rates are fixed, the lower of which is much below the normal daily wage-rate and is payable until a standard performance is reached. The higher rate comes into operation only after the standard is reached and serves as a very strong incentive to ambitious and capable workers to increase output. The system thus results in penalising the inefficient workers, and is particularly advantageous in a business where the overhead expenses are unusually heavy. It has, however, limited application in American industry, for the task standard is so severe that only workers of exceptional skill can accomplish it. In fact, the system is meant to weed out the inefficient and encourage exceptional performance.

The standard of efficiency is arrived at as a result of close analytical time study of each job. For this purpose, each job is first divided into its elementary operations, and after a careful and scientific observation of the time taken on each operation by a number of workers possessing average skill and intelligence, the normal total time taken up for the complete performance of a job is ascertained and is fixed as the time for working it. In order to facilitate highest efficiency, plant conditions are highly standardised and every possible care is taken by the management to eliminate all waste of time such as waiting for tools, materials, etc.

As an illustration, let us assume that the time rate is Re. 1 per hour, and the usual rate per output is one piece per hour. Let us further assume that time tests have proved that with maximum effort two pieces can be turned out in the same time. If the worker's output reaches the maximum standard, i.e., if he has turned out 2 pieces per hour, he will be rewarded at a higher [illegible] than the time rate, say, at As. 12 per piece. He will thus receive Re. 1-8-0 for the hour. Even if he turns out more than two pieces per hour, he will still be paid at the rate of As. 12 per piece. In case of a worker failing to reach this level, however, he would be paid at a rate lower than the time rate of Re. 1 per hour as a penalty for not doing his best.

The main problem underlying this method is that whether a worker turns out five or ten pieces within a stated time, the bulk of the overhead will remain just the same. Evidently, therefore, it will be worthwhile for the manufacturer to pay more per piece if the number of pieces exceed the standard limit, as the overhead burden per piece is thereby reduced. On the other hand, the workman who produces below the standard is costly, and a portion of the manufacturer's loss is imposed on the workman in the shape of a decreased piece-work rate. Under this system, the good worker gets good pay and the sluggish worker poor pay.

The Differential Piece-Rate Plan is better suited to those establishments in which indirect expenditure is very heavy in comparison with the cost of labour. Although the incentive towards attaining the efficiency mark is high, the penalty inflicted on the slow worker seems to be rather harsh. This, however, has been purposely done in order to attract only the most efficient operators and to remove slow and inefficient ones.

Q. 83. Explain the working of the following Task and Bonus Systems:
(a) Gantt Bonus System, and
(b) Emerson's Efficiency System.

A. (*a*) The **Gantt Bonus and Emerson's Efficiency Systems** are both modifications of the Taylor's Task and Bonus Plan. The standard time is carefully determined by exhaustive scientific. time studies as in case of the Taylor's System, but they both fix a daily wage-rate to be payable even if the standard is not reached.

(*b*) Under the **Emerson's System**, if the worker attains to two-thirds of the maximum standard set, he receives a 10 per cent bonus on the day-rate, and such bonus gradually increases till 100 per cent efficiency is reached. The plan appeals to the new and slow workers, as a guaranteed day-rate is paid even if less than two-thirds of the standard set is accomplished.

In the **Gantt System**, if the worker performs the allotted task in the time set, he gets the daily wage-rate and a stipulated bonus. If he fails to do so, he gets his daily wage only. In this case, the slow workers are not penalised, but receive their usual time-rate. The piece-work rate, however, is usually lower than the higher rate offered under the Taylor System. A peculiar feature of this system is the payment of bonus to the foreman in respect of every man under him who earns bonus. This is with a view to encourage each foreman to see that the workers in his charge bring up their performance to the bonus standard.

This system provides a definite incentive to increased production, as the task time is so determined as to make the attainment of the standard regularly possible and the bonus to be earned by average workers not possesing exceptional ability.

Q. 84. Briefly explain the working of the following systems of wage payment:

(a) Merrick Multiple Piece-rate ; and

(b) Bedeaux or Point System.

A. (*a*) **Merrick Multiple Piece-rate** is yet another modification of the Taylor's Plan, with the difference that under this system three different piece-rate scales are fixed. When a worker's efficiency is less than 80 per cent of the standard, his earnings are calculated from a base piece-work rate. Beyond 80 to less than 100 per cent, a slightly higher rate by 10 per cent is payable to those who have not been able to reach up the standard. The highest rate of further 10 per cent is payable to those reaching the 100 per cent efficiency. This is the most widely used modification of the Taylor's System, and is well suited for the upgrading of inefficient and slightly sub-standard workers who would not like to continue under the low Taylor Piece-rate.

(*b*) **Bedeaux or Point System.**—Although similar in principle to the Halsey Premium Bonus Plan in that the worker who performs the task in less than the set standard time receives a portion of the saving in wages resulting therefrom, the system represents one of the newer types of wage plans. It claims to have overcome the enormous difficulties in the fixing of piece-rates and bonus-rates in relation to the different jobs in the same factory where different sorts of products are worked on various types of machines, some requiring great skill and entailing severe physical strain on the workers, and others calling for very little ability and efforts.

The main feature of the system lies in an exhaustive analysis of each job and most careful time and motion study of each operation involved, in order to ascertain the skill and physical effort required in its performance and the fatigue resulting therefrom.

A special unit of measurement of human effort is used called a " point " or " B " which is to represent a certain amount of useful work plus time allowances for rest and unavoidable delay, the total of which can be accomplished by an average worker at a normal speed in one minute. The ratio of actual work to rest or delay in a " point " will of course vary in different *types of work, but in all cases, the standard task would be measured by a "60 point hour", i.e. the achievement of 60 units or B's in one hour. The standard time for each job will then be assessed in terms of B units or minutes* consisting of the correct proportions of work, rest and delay; for example, the standard for a particular job may be assessed at 45 B's. A point-standard is thus the number of points allowed for the performance of a given amount of work.

The task set is not so severe as under the Taylor System, so that an experienced worker of average skill can attain it to earn the necessary premium, as in the Gantt, Emerson and other systems.

The worker is paid the ordinary time-rate for the hours actually worked, and the bonus is usually calculated at 75 per cent of the time saved, the remaining 25 per cent being set aside as a bonus to foremen, supervisors and other auxiliary workers (indirect labour). It needs to be noted that allowances are considered as delays beyond the control of the workers, and are added to the points produced during the day.

Q. 85. Explain what you know about the system of wage payment on Sliding-Scales.

A. In some industries, the system of wage payment provides for the fixing up of a standard normal wage-rate which is allotted to a certain index according to a sliding scale and which is made to vary according to variations in this index. The most important type of sliding-scale arrangement in operation is that attached to the cost of living index. This method is based upon the belief that wages should be determined by the general level of prices and will be made to rise and fall in proportion thereto. This method presents a feeling of security to the workers that his wage-rate will not be reduced to levels which would render the maintenance of his usual standard of living difficult for him.

Industries such as coal and metal mining, in which the sale price of the product tends to fluctuate considerably, usually enter into collective agreements between the organisations of employers and trade unions setting a standard basic rate for the unit of product with the condition, however, that at stated intervals of six months or a year such rates shall be revised according to variations in the selling price of the commodity. Of late, however, the trade unions insist upon a living wage-rate and prefer the wage-rates to vary according to living costs more than the adjustment of wage levels on the basis of price fluctuations of any single product.

Sliding scale methods of wage payment do not generally find favour with the employers as they entail heavy clerical work due to constant adjustments, and render costing and estimating more cumbersome.

Q. 86. Discuss the relative merits of paying bonus to individual worker according to his efficiency and a similar payment to a "gang" or "group" of workers.

A. Workers, as a rule, would always prefer that their wages as well as bonus be determined according to their individual efforts so that each may secure the full benefit of his own endeavours. Besides, paying of bonus to individual worker according to his own efficiency must result in enabling skilled and willing workers to give of their best regardless of what the others do. It will also have the effect of helping the management to weed out the sluggish and inefficient workers, who may be given jobs requiring less skill or efforts.

Under a group bonus system, the workers doing the same type of work or closely related jobs are required to pool a certain required output in a group, and to distribute their bonus among the members of the group as they may have predetermined. The main disadvantage of such a system lies in the fact that an inefficient worker may earn as much bonus as an efficient one and would thus tend to destroy individual initiative. It also makes the checking of individual efficiency harder.

The advantages of a suitable group bonus plan, if worked under fairly efficient conditions are:

(1) It fosters better co-operation and team-work;

(2) Reduces amount of supervision and inspection required;

(3) Instills self-discipline among the workers;

(4) Increases production by joint efforts;

(5) Decreases the cost of production by reducing spoiled work; and

(6) Simplifies Pay-Roll and Cost Accounting.

The group bonus plan would, however, work effectively and advantageously where the nature of the jobs requires the combined efforts of a group of workmen. The group leader or foreman generally shares the bonus with the other members of the group as so much would depend on the zeal, energy and efficiency he would be capable of instilling in the men in his charge. For a successful working of the Group Bonus Plan, an important factor is to ensure that men of equal skill, dexterity and willingness to work are grouped together.

Q. 87. Explain what you understand by Profit-sharing Schemes.

A. Various Profit-sharing Schemes now introduced give the employees a share in the net earnings of the enterprise in addition to their regular wage. The object of any such scheme is to give the workpeople a financial interest in the success of the concern with a view to stimulate a collective spirit among them resulting in less labour trouble and turnover. It is sure to encourage economy in the use of materials and machines, cultivate peaceful relations, promote loyalty to the job and the enterprise, and result in an all-round efficiency.

The following are the principal plans of distributing profits amongst the employees:

(*a*) Setting aside at the end of each year a definite percentage of net profits for cash distribution among employees to be apportioned individually under a predetermined scheme within a certain time from the declaration of profits;

(*b*) The distribution of profits to be made under a deferred plan by way of participation in a pension fund, annuity fund or credits to savings account to be drawn upon at some future date under certain conditions, the chief such condition being not to leave the concern within a given period; or

(*c*) The distribution may take the form of shares in the company with or without restrictions as to transfer or sale.

The above plans, although successful in several instances, have failed in many cases to provide the requisite incentive to efficiency and goodwill for the following reasons:

(1) The remoteness of the reward by way of bonus payable at the end of six months or a year;

(2) Absence of direct incentive to individual worker as the slow worker may share equally with the diligent;

(3) The individual bonus amount may be negligible; and

(4) The workers may have given of their best, but bad management may reduce the profits.

Q. 88. State briefly the essential conditions which should prevail, if any Profit-sharing Scheme is to meet with the full support of the workpeople.

A. For the successful working any Profit-sharing Plan, the following conditions should prevail:

(1) The method of arriving at the net profit for the purpose of distribution must be fixed so as to render impracticable any attempts by the management to reduce it by manipulation of reserves, or by any unreasonable increase in salaries or other expenses;

(2) The basic wage must be adequate and reasonable, and must not be less than that paid locally in the same industry;

(3) The representatives of labour must have full opportunities of satisfying themselves as to the accuracy of the accounts;

(4) The right to share in the profits must be legalised by agreement and not left to the discretion of the employers;

(5) The employees must be free to join any trade unions, and should not be bound under any unreasonable stipulations;

(6) The method of distribution to the individual worker must be predetermined and regularised; and

(7) There should be no reconsideration or readjustment in the agreement once arrived at unless labour is a willing party to it.

[For Q. 89 and its Answer, see next page.]

Q. 90. What do you understand by:
(a) Output Bonus Plan, and
(b) Cost Bonus Plan ?

A. Output Bonus Plan is a method of collective bonus under which each shop or department is offered a separate fixed bonus per hour or per unit, if the standard time is saved, or if the production reaches or exceeds a stated quantity. Under this scheme, the standard weekly output is agreed upon between the employers and the representatives of the workers, such output being based on a fixed number of workers or a definite number of working hours per week. At the end of the week, the total production is measured in definite units, and in case of increase over the standard output, a bonus becomes payable to every worker including the foreman, at the percentage the increased output bears to the agreed standard.

The Cost Bonus Plan is an arrangement between the management and the operatives under which a standard cost in certain quantity and quality of products is fixed, and if the cost of production comes to less than the predetermined cost, a portion of the amount thus saved becomes payable to the workers of the department concerned.

Q. 89. Give the principal methods of Wage Payment in a tabulated form.

A.

PRINCIPAL METHODS OF WAGE PAYMENT

- **Pure Wage Systems**
  - Time Wages
  - Piece Wages
- **Premium Bonus Systems**
  - The Halsey System
  - The Rowan System
  - The Bedeaux or Point System
- **Task & Bonus Plans**
  - Taylor's Differential Piece-Rate Plan
  - Emerson's System
  - Gantt System
  - Merrick Multiple Piece-Rate
- **Collective Bonus Plans**
  - The Priestman Plan
  - Cost Bonus Plan
- **Profit-Sharing and Co-partnership Schemes**
  - Cash Distribution
  - Deferred Plan
  - Distribution in Shares
- **Sliding-Scale Systems**
  - Cost of Living Index.
  - Fluctuations in Sale Price.

CHAPTER VI

ALLOCATION AND DISTRIBUTION OF OVERHEADS

Q. 91. Explain what is meant by the term "Oncost". Outline in full details the procedure necessary for the proper collection, classification and allocation of expenses with a view to their recovery from costs.

A. The term "Oncost" represents the overhead indirect expenses chargeable to the individual cost units in order to ascertain the total cost of each such unit of production. The main divisions into which Oncost Charges may be classified are (1) Works Expenses, (2) Office Expenses, and (3) Selling Expenses.

The collection, classification and allocation of Oncost presents several difficulties as the items covered by overhead charges are numerous and varied in their nature. Besides, as they relate to general services auxiliary to the main function of production and are not specifically expended upon any particular product or job, it becomes difficult to ascertain definitely the exact portion of each class of overhead burden attributable to each process, operation or department of the factory. The problem is not so simple as that presented by direct materials, direct labour and direct or chargeable expenses, as the exact amount of each such expense consumed or expended on each product or a group of products can be definitely measured and most accurately determined.

Another difficulty about these overhead charges is that all of them do not arise from week to week or even month to month, and yet they have to be ascertained periodically for the purpose of inclusion in costs which have to be prepared promptly and accurately. For instance, items like repairs to plant, tools and buildings, bad debts, taxes, commission, advertisement, provision in respect of depreciation, etc., cannot be exactly determined till the end of the financial period, and yet it becomes necessary to include all such expenses in the oncost in order to ascertain the final cost of each unit of production at much shorter periods. It is evident, therefore, that the ascertainment and allocation of the oncost burden resolves itself into a matter of estimate, but such estimate must be done on most scientific and efficient lines so as to give results bearing closest approximation to actual conditions. It is clear that any incorrect enumeration and improper allocation of expenses to the prime cost of products would give results far from accurate.

To begin with, a careful collection of all the overhead expenses of the business must be done on systematic and natural lines of division, as this would help considerably towards the ascertainment of the total oncost as also its subsequent apportionment. It is equally important to note that the division of the nominal accounts indicating the heads of expenditure in the financial books should also be made on similar lines so as to admit of useful comparisons.

Having prepared separate classified statements of expenses relating to Works, Office Establishment and Sales, the amounts actually expended during the immediate preceding year under each of the nominal heads of expenditure should be set out. Necessary adjustments should then be made to any of these items in respect of any anticipated increase or decrease during the current year, and the result will be the estimated oncost expenditure of the period based on a definite output. These expenses may then be sub-divided into shorter periods, say weeks or months, and the weekly or monthly oncost burden thus ascertained should be distributed over the different departments of the works on some reasonable and consistent basis with due regard to the actual facts and circumstances. But these figures should then be subjected to a close scrutiny and tested in the light of actual facts to see how far they are in agreement with the amounts actually expended under each head at the close of the financial period, and, if possible, at shorter intervals.

In a manufacturing business, where there are several distinct departments working under different conditions, it is absolutely essential for an equitable division of oncost to ascertain the works expense attributable to each such department. Each department should be treated as a distinct entity, and the particular conditions obtaining in each and the class of the work done therein should be closely examined and taken into account before deciding upon the method of allocation of each departmental oncost.

The weekly or monthly oncost attributable to each department will then be recovered from the accounts of the jobs, processes or other production units worked by it during the same period. It may be that different methods of charging the oncost to the jobs or processes may be found necessary in different departments with due regard to the nature of the work performed in each such department.

The work of periodical analysing and distribution of the whole of the expenses to the several departments, processes or jobs for the purpose of their ultimate recovery from costs will thus be carried out under distinctly four processes as under:

(1) The first process will comprise the collection of all the expenses by the Accounts Department from the financial records at the end of each month and then passing the lists on to the Cost Office for verification, analysis and distribution. To facilitate the preparation of such statements, it is essential that the Works Expenses, Administrative Expenses and Sales Expenses should be maintained separately in the Financial Ledger. Besides, to enable a rigid control to be maintained on the expenses incurred under each and every head

and to serve the most useful purpose of periodical comparison, it is highly desirable that the grouping, sub-division and analysis of the expenses by the Accounts Department should be on a line with the analytical information required by the Cost Office, and must present as complete and detailed information as may be necessary for an equitable distribution of the whole of the expenses;

(2) This will be followed by the analysing and grouping of the various items of expenses by the Cost Office under properly arranged heads and sub-heads;

(3) The next step will be the apportionment of each class of expense amongst the several productive and non-productive departments which may have benefited by each such expense, and the ascertainment of the total periodical oncost applicable to each department or section of the works; and

(4) Finally, there will be the most important task of recovering the total departmental expenses of the period by charging these to the various cost units of each such department for the same period, on a basis that would be found most suitable to the business. This would entail the ascertainment of the oncost rate for the purpose of its inclusion in the individual cost unit.

Q. 92. Give the main heads under which Works Expenses are usually grouped so as to provide a correct measure of allocation of each class of expenditure amongst the various departments of the factory.

A. To facilitate a correct and reliable allocation of the numerous Works Expenses and also to serve as a means to rigid control over these, it is usual to group all the expenses attributable to each auxiliary service under its appropriate head so that the total periodical expense of running each such non-productive service may be readily ascertained. The Works Overhead would thus be classified into the following heads:

(1) Works Building Expense;
(2) Power Expense;
(3) Plant Expense;
(4) Stores Expense;
(5) Tools Expense;
(6) Laboratory Expense;
(7) Planning and Design Expense;
(8) Welfare Expense;
(9) Works Supervision Expense;
(10) Works Administration Expense;

(11) Inspecting and Testing Expense;
(12) Buying Office Expense;
(13) Labour Office Expense;
(14) Assembly Department Expense;
(15) Internal Transport Expense;
(16) Estimating Department Expense;
(17) Maintenance Expense;
(18) Costing Section Expense;
(19) Sales & Publicity Expense;
(20) Transport & Shipping Expense, etc., etc.

The above list presents an outline of the manner in which the Works Overhead is usually sub-divided. All the expenses incurred during any given period in running any of the above services would then be duly classified and grouped under their appropriate heads. For instance, Works Building Expense will comprise all expenses necessary towards the maintenance of the Factory Buildings and running these for production purposes. These will include: (1) Factory Rent & Taxes, (2) Factory Buildings Repairs and Maintenance, (3) Factory Buildings Insurance and Depreciation, (4) Factory Lighting, Heating, Cleaning and Painting, (5) Water consumed, (6) Maintenance of Elevators, and (7) Sundry Expenses appertaining to Works Buildings.

Such a classification would help enormously not only towards a prompt and accurate allocation of the expenses relating to each non-productive service amongst the productive departments, but will also be useful for comparative purposes from period to period, so that any undue increase in the running of any auxiliary service may be brought to light.

Q. 93. Give a list of the items that would be included in the ascertainment of the total cost of each of the following services:

(a) Power Expense;
(b) Tools Expense;
(c) Stores Expense; and
(d) Laboratory Expense.

A.

(a) Power Expense will include:

Power-house Salaries,
Power-house Wages,
Motive Power consumed,
Cost of Fuel, Oil, etc.,
Power-house Rent, Taxes and Lighting,

Insurance on Power-house Building,
Insurance on Power Plant and Equipment,
Water consumed,
Repair and Maintenance to Power-house and Plant,
Depreciation of Power-house and Plant, and
Sundry Stores consumed.

(b) **Tools Expense will include:**
Cost of materials consumed,
Manufacturing Wages of Tools Department,
Salaries of Technicians in Tools Department,
Lighting, Heating and Insurance,
Labour consumed in Tool Repairs,
Rent and Depreciation,
Consumable Stores,
Maintenance of Tools Department Equipment and Fixtures, and
Sundry Expenses.

(c) **Stores Expenses will comprise:**
Salaries of Store-keepers and Store-clerks,
Wages of Stores Labour,
Maintenance of Stores Fixtures,
Rent and Insurance of Stores Department,
Stores Adjustments,
Stores Lighting, Heating and Cleaning,
Portion of Building Expenses for space occupied by Stores, Stores Building and Equipment Depreciation, and Sundry Expenses including Printing and Stationery.

(d) **Laboratory Expense will include:**
Salaries of Research Workers,
Wages of labour employed,
Materials consumed in experimenting,
Laboratory Lighting and Heating,
Laboratory Building and Equipment Insurance,
Maintenance of Laboratory Plant and Building,
Consumable Stores,
Depreciation of Laboratory Plant and Building, and
Laboratory Rent and Sundry Expenses.

Q. 94. While collecting Overheads, state what items would need to be included in

(a) Building Expense;
(b) Welfare Expense;
(c) Plant Maintenance Expense;
(d) Factory Supervision; and
(e) Costing Office Expense.

A.

Building Expense will include:

Rent and Taxes,
Insurance,
Water consumed,
Lighting and Heating,
Repairs,
Maintenance of Elevators,
Cleaning,
Sundry Expenses, and
Depreciation.

Welfare Expenses.—These will include the following:

Expenses of running Canteens for the supply of food;
Expenses relating to sports, musical and other social activities;
Facilities for specialised training to workpeople in the particular industry;
Educational facilities for the workmen's children;
Ambulance and Free Medical Aid;
Cheap Transport to and from Works;
Upkeep of Recreation Grounds; and
other expenses incurred by the Welfare Department.

Plant Maintenance Expense will include:

Belting, Oil, Cotton Waste, Rags, etc.,
Other Stores and Materials consumed in repairs,
Wages for repairing, oiling, cleaning, etc.,
Plant Insurance,
Depreciation of Plant, and
Sundries.

Factory Supervision.—Under this head will be included all salaries and wages paid to superintendents, inspectors, foremen, viewers, testers, etc., which are not specifically charged to any particular works order or job. It need hardly be mentioned that where there is a departmental division of the Works, any salaries and wages for supervision directly attributable to each such department will be included in its own Works Oncost, and the balance only which does not specifically relate to any department in particular will form part of the General Works Oncost.

Costing Office Expense.—Salaries of the Cost Accountant and the clerical staff employed under him, as also the cost of printing, stationery, files, registers, etc., used by the department, and cost office cleaning and other labour will be collected under a special Service Order Number. The item represents an expense for the benefit of the business as a whole, and must be apportioned between Administrative, Works and Sales Oncosts on some sound and consistent basis.

Q. 95. Explain what is meant by Auxiliary or Non-productive Services, and the System of Service Order Numbers.

A. Services rendered by Non-productive Departments such as Planning and Estimating Department, Buying Office, Power Section, Tools Section, Repairs and Maintenance Department, Store-keeping, Inspection and Testing, Employment Bureau, Wage Office, Costing, etc., are known as Auxiliary or Non-productive Services. All such Services are, however, necessary to enable production work to be carried out.

The system of Service Order Numbers or Works Expense Order Numbers is being employed by a majority of industrial concerns in order that the amount expended on each type of service or class of indirect work can be easily identified and controlled. The main object is to facilitate a proper collection, analysis and allocation of all the varied indirect expenses for the purpose of accurate costing.

Under this system, every order issued for expenditure on any of these auxiliary services must be in writing and must indicate the specific number, distinguishing initial or other alphabetical symbol relating to that particular service. Where the factory is divided into several departments or shops, a further identification of each such department or shop will be needed for the correct allocation of expenses attributable to each of them. In each case, therefore, the Service Order must also specify the particular shop or section of the Works to which such service was rendered. When all indirect labour paid and all indirect materials and stores consumed on each service are thus charged under their relative numbers or symbols, the work of identification of each expense and the collection and classification thereof is greatly facilitated for costing purposes.

Service Orders are greatly helpful in arriving at the cost of each Service or Indirect Work, for the purpose of allocation of these indirect charges amongst the different productive departments. The proper classification of

Service Orders is also considerably useful in enabling a close scrutiny of the items collected under each head to be made, and helping towards a comparison of expenditure under similar heads from one period to another. They serve further to reduce to a minimum the expense which cannot be directly allocated.

The division of the Works into Productive Departments and Non-productive Departments or Services, and the proper classification of expenses and their division into Service Orders need most careful handling. It must call for most intimate technical knowledge of the particular industry, and is evidently the work of an engineer or highly-skilled technician possessing specialised knowledge.

In order that the Service or Works Expense Orders may serve the most useful purpose of direct allocation of expenses to the Departments concerned, care should be taken to ensure that all expenses which can be directly identified with the activities of any particular Department should be charged to that Department, so that the items of general expense to be apportioned over the Departments on some arbitrary basis may be reduced to their minimum.

The system of Service Order Numbers has proved immensely useful in rendering the identification of each class of auxiliary work easy by saving the constant and useless repetition of the names of services which have frequently to be performed in almost all manufacturing concerns. Whichever scheme of identifying these indirect expenses is adopted, it need not be unnecessarily elaborate and unwieldy as it is meant to help towards the collection and classification of expenses and their accurate apportionment to the different cost units. The main object of any Service Order System should be to avoid as far as possible the apportionment of expense on more or less arbitrary lines.

Q. 96. State what important points should be borne in mind while introducing a System of Service Order Numbers in a large industrial concern.

A. The following important points would need to be borne in mind in this connection:

(1) The system of Service Orders should be simple, workable and sufficiently elastic so as to be capable of easy modification. It must admit of any items being eliminated or regrouped, or any fresh items being inserted as necessity may demand;

(2) Too minute a dissection of expenses should be avoided. In other words, the analysis and sub-analysis of expenditure should be carried to such an extent only as would really be needed and would be found useful for the purposes of costing, periodical comparison and control;

(3) The clerical labour and cost involved should be commensurate with the needs of the business, and should under no circumstance be out of all proportion to the beneficial results to be achieved;

(4) No two services or items of expense should have similar symbols or numbers so as to be open to different interpretations and thus serve to create confusion;

(5) Every Service Order should be in writing, irrespective of whether the same is issued by the Planning Department, the Departmental Head or the Foreman, according to the nature of the work;

(6) In order to enable everybody in the Works to know what each symbol or number represents, a permanent Schedule should be prepared of the Service Order Numbers, symbols or alphabetical letters, enumerating in detail the specific items to be included under each head. Such a Schedule should be put up in prominent positions in the Works, and should also be available to the financial and costing departments;

(7) Each Service Order should clearly identify the productive department or section, the auxiliary service, and the class of expense involved;

(8) In respect of tasks such as supervision, shop clerical work, oiling and cleaning the machines, cleaning and sweeping the shops, etc., which form part of the daily routine work, no individual written service order need be issued, as the men employed on such jobs will attend to their respective duties according to a set programme. The expenditure under each such head will even then be known and classified by its numerical or alphabetical symbol so as to help towards proper analysis and allocation of the whole of the indirect expense; and

(9) In the working of any system of Service Orders, a distinction should always be drawn between Capital Expenditure and Revenue Expenditure. Expenditure relating to extensions to buildings and manufacture of new plant, machinery, tools or other equipment by the Works' own men, and cost of erection of machinery and plant will be classed as Capital Expenditure, and will require separate Service Orders which must clearly specify that such expenditure relates to capital outlay. All other indirect work of diverse nature such as maintenance and repairs to buildings and plant, oiling and cleaning of machinery, expenditure on internal transport, storekeeping, upkeep of tools, experimenting, inspection and testing, re-grouping of and alterations to machinery, rectification of defective production, general supervision and labour, etc., will be styled Revenue Expend ture, and will each call for a separate Service Order indicating nature of the work performed.

Q. 97. Illustrate in detail the working of Service Order Numbers by means of an alphabetical symbol for each type of service and its sub-division by a specific series of numbers.

A. The following illustration will sufficiently explain the working of this simple system of Service Order Numbers.

Let us assume that the symbol R is fixed to indicate Repairs and Maintenance, and the repairs to the different sections of equipment may be identified by numbers, say, 1 to 20:

R. 1 to R. 20 will be for Repairs and Maintenance to Buildings:

R. 1 = Repairs to Works Building.
R. 2 = „ „ Foundry Building.
R. 3 = „ „ Power House.
R. 4 = „ „ Office Building.
R. 5 = „ „ Stores Building.
R. 6 = „ „ Warehouse Building, etc., etc.
Etc., etc.

R. 21 to R. 40 for Repairs to Plant and Machinery:

R. 21 = Repairs to Power Plant and Power Lines.
R. 22 = „ „ Production Machinery.
R. 23 = „ „ Hydraulic Plant.
R. 24 = „ „ Transmission Plant.
R. 25 = „ „ Internal Transport Plant (Cranes, Hoists, Trolley Tracks, Elevators, Trucks, etc.).
R. 26 = „ „ Electric Motors (Controllers, Switches, etc.)
R. 27 = „ „ Electric Lighting and Heating Equipment.
R. 28 = „ „ Laboratory Plant etc., etc.
Etc., etc.

R. 41 to R. 60 for Repairs to Furniture, Fixtures and Equipment:

R. 41 = Repairs to Works Fixtures and Fittings.
R. 42 = „ „ Office Furniture and Equipment.
R. 43 = „ „ Stores Fixtures and Equipment (Bins, Scales, Racks, etc.)
R. 44 = „ „ Loose Tools and Implements.
R. 45 = „ „ Repairs to Dies, Jigs and Patterns.
R. 46 = „ „ Warehouse Fixtures and Equipment.
R. 47 = „ „ Sales Room Fixtures and Equipment.
R. 48 = „ „ Assembly Shop Fixtures and Implements, etc.
Etc., etc.

L. for Works Indirect Labour:

L. 1 for Inspecting and Testing.
L. 2 „ Time-keeping and Gate Control.

L. 3 for Foremen and Assistants.
L. 4 „ Machine Tools and Shop cleaning.
L. 5 „ Oiling and Cleaning Machinery.
L. 6 „ Power House Wages and Salaries.
L. 7 „ Shop Clerical Labour.
L. 8 „ Experimenting and Research Technicians.
L. 9 „ Drawing Office Labour.
L. 10 „ Store-keeping Labour.
L. 11 „ Internal Transport Labour.
L. 12 „ Wages Office.
L. 13 „ Cost Office Wages and Salaries.
L. 14 „ Rate-Fixing, etc., etc.
Etc., etc.

A. for Administrative Expenses:

A. 1 = Administrative and Management Salaries.
A. 2 = Office Clerical Staff Salaries.
A. 3 = Office Rent and Taxes.
A. 4 = Office Lighting, Heating and Cleaning.
A. 5 = Fire Premium for Office Building, Fixtures and Equipment.
A. 6 = Printing, Stationery and other supplies.
A. 7 = Telephone and Sundry Office Expenses, etc. etc.
Etc., etc.

S. for Sales Expenses:

S. 1 = Travellers' Salaries.
S. 2 = Travellers' Commission and Expenses.
S. 3 = Samples.
S. 4 = Catalogues and Price Lists.
S. 5 = Press Advertising.
S. 6 = Exhibition Expenses.
S. 7 = Discounts and Bad Debts.
S. 8 = Sales Office Expenses.
S. 9 = General Labour (Sales Department), etc., etc.
Etc., etc.

D. for Distribution Expenses:

D. 1 = Packing Cases and other Charges.
D. 2 = Dispatch Charges (Carriage and Freight Outwards).
D. 3 = Warehouse Expenses.
D. 4 = Upkeep of Delivery Vans.
D. 5 = General Labour, etc., etc.
Etc., etc.

W. for Welfare Expenses:

W. 1 = Dining Facilities and Canteen.
W. 2 = Recreation and Sports.
W. 3 = Medical Aid and Ambulance.
W. 4 = Educational Facilities.
W. 5 = Transport to and from Works, etc., etc.
Etc., etc.

The above is a sufficiently representative list to explain how the varied expenses can be grouped under appropriate heads and how to use letters and numbers to identify the main divisions of expenses and their relative subdivisions.

Any expense of a capital nature would need to be distinguished either by the use of different tinted paper for its relative Service Order, or by marking it with the capital letter C boldly at the top.

Each Department or Section of the Works would also need to be identified by the use of a number or letter as a prefix or suffix. Thus, B/R22 or R22/B would mean repairs to Production Machinery of B Department, and D/L3 or L3/D would represent wages of Foremen and Assistants of D Department. Where numbers are used to identify Departments or Sections, repairs to Production Machinery of Department No. 2 may be shown either by the symbol 2/R22 or R22/2.

Q. 98. Give a more comprehensive method of Service Order Numbers with full explanations as to its working.

A. Let us assume for the sake of a more comprehensive illustration:

(*a*) That a factory consists of six Productive Departments which are known by numbers 1 to 6;

(*b*) That its Auxiliary Services are known by their appropriate alphabetical symbols in Capital Letters; and

(*c*) That the nature of each Expense is known by an appropriate alphabetical symbol in small letters.

In the above circumstance, the corresponding Service Orders will be marked as under:

BL	**will represent**	**Building Expense.**
PW	„ „	**Power Expense.**
MP	„ „	**Machinery and Plant Expense.**
ST	„ „	**Stores Expense.**
DP	„ „	**Design and Pattern Service.**
WM	„ „	**Works Management.**
IS	„ „	**Inspection and Supervision.**

RE will represent Research and Experimenting.
ED „ „ Engineering and Draughting.
TL „ „ Tools Service.
MH „ „ Material Handling.
WL „ „ Welfare Service.
FP „ „ Fire Protection Service.
SL „ „ Sales Expense.
DS „ „ Distribution Expense.
EF „ „ Equipment and Fixtures,
etc., etc.

Similarly, each class of expense would be represented thus:

rm will stand for Repairs and Maintenance.
rt „ „ „ Rent and Taxes.
in „ „ „ Insurance.
lh „ „ „ Lighting and Heating.
oc „ „ „ Oiling and Clearing.
sl „ „ „ Salaries.
fl „ „ „ Fuel.
wr „ „ „ Water.
sc „ „ „ Shop Cleaning.
dp „ „ „ Depreciation.
mc „ „ „ Miscellaneous Charges,
etc., etc.

The above list is by no means complete, and may be condensed or expanded as the exigencies of the business may demand. For instance, where the nature of the business and the system of organisation demand a more detailed division of expenses, these may be sub-classified and may then be identified by the following Service Symbols:

The symbol MP which stands for Machinery and Plant Expense may be further sub-divided as under:

MP (*a*) — would mean service rendered to Boilers.
„ (*b*) — „ „ „ „ Generators.
„ (*c*) — „ „ „ „ Power Plant.
„ (*d*) — „ „ „ „ Hydraulic Plant.
„ (*e*) — „ „ „ „ Transmission Plant.
„ (*f*) — „ „ „ „ Steam Plant.
„ (*g*) — „ „ „ „ Internal Transport Plant.
„ (*h*) — „ „ „ „ Production Machinery.
„ (*i*) — „ „ „ „ Electric Lighting Plant.
„ (*j*) — „ „ „ „ Material Handling Plant,
etc., etc.

Similarly, the symbol BL which represents Building, Expense may be divided into the following sub-classifications:

BL (*a*) = Works Building.
„ (*b*) = Office Building.
„ (*c*) = Stores Building.
„ (*d*) = Warehouse Building,
etc., etc.

In a like manner, the item Equipment and Fixtures may be sub-divided thus:

EF (*a*) — Works Fixtures and Fittings.
„ (*b*) — Office Furniture and Equipment.
„ (*c*) — Stores Fixtures, Fittings and Equipment.
„ (*d*) — Warehouse Fixtures and Equipment.
„ (*e*) — Sales Room Furniture and Fittings.
„ (*f*) — Dispatch Room Fixtures and Equipment,
etc., etc.

Where the expense to be incurred is of a capital nature, the fact should be signified by a distinguishing symbol. This may be done by adding the Capital letter C as a prefix to the Service Order Number. Another way to distinguish capital expenditure is to use a different coloured paper for such service orders.

In order to identify the department to which the work relates, the departmental number may be added at the end of the alphabetical symbol.

Under the system as above determined, the diverse indirect services will be symbolised thus:

C/BL(*a*)/2	on a Wage Ticket will mean Wages expended on Works Building, for Department 2 to be capitalised.
BL(*b*)/rm	on a Material Issue Requisition will mean materials issued for Repairs and Maintenance to Office Building.
MP(*d*)/oc	will mean Oiling and Cleaning Hydraulic Plant.
EF(*e*)/dp	will mean Sales Room Furniture and Fittings Depreciation.

Q. 99. Enumerate the statements ordinarily prepared for the purpose of collection, classification and allocation of expenses with a view to recovery from costs.

A. The following statements are usually prepared for the collection, classification and allocation of expenses for costing purposes:

(1) Summary of Administrative Expenses.

(2) Summary of Works Expenses.

(3) Summary of Sales and Distribution Expenses.

(4) Indirect Wages Analysis or Abstract.
(5) Indirect Material Analysis or Abstract.
(6) Analysis and distribution of Works Expenses over Auxiliary Services.
(7) A separate statement of Works Expenses directly incurred for and attributable to each particular department or section of the works.
(8) Allocation of Auxiliary Services Expenses over Productive Sections.
(9) Allocation of other Works Expenses of a general nature over Productive Sections.
(10) Statement showing allocation of Sales and Distribution Expenses.

Q. 100. Explain clearly how you would deal with Administrative Overhead for the purpose of allocation and distribution over the cost units. State also in what circumstances Sales Expenses should be dealt with separately from Office Oncost.

A. Administrative Overhead would ordinarily include the whole of the expenditure incurred in the financial and general administration and management of the business, and as these expenses relate to the trading and not the manufacturing side of the business, they will not form part of the Factory Oncost, and will have to be treated separately. Usually, they would also include Selling and Distribution Expenses, i.e. expenses incurred in disposing of the finished products. The entire burden in respect of Office Oncost and Selling and Distribution Oncost would in such cases be allocated towards the different departments, processes or jobs on the basis of a percentage on their respective Works Oncost or Works Costs. This method will, however, give accurate results only where the products are of such a nature as are capable of being disposed of in the same market and by means of the same sales organisation.

Where, however, the nature of the business is such that the products of one department require more costly advertising organisation or sales efforts than those of another, then in such cases, the Administration Oncost must be separated from Selling and Distribution Oncost. The former may, in such a case, be distributed over the different jobs by way of a flat rate on their respective Works Oncost or Works Cost. The Selling and Distribution Oncost should in such a circumstance be distributed over the different groups of products on some other fair and equitable basis so that each cost unit may be burdened with its legitimate share in respect of its sales and distribution efforts.

Q. 101. What are the usual methods employed for the recovery of Establishment Overhead, where the cost per each job or product is required ?

A. For the purpose of ascertainment of the total cost of each job or product, any one of the following methods is usually applied in order to recover Establishment Charges:

(*a*) By means of a percentage on the Works Overhead of each job or product; or

(*b*) By means of a percentage on the Works Cost of each job or Product; or

(*c*) By means of a percentage on the Prime Cost of each job or product; or

(*d*) By means of a percentage on the Direct Labour Cost of each Job or Product.

Q. 102. State the main classifications into which Sales and Distribution Expenses can be divided for the purpose of accurate recovery from costs, where such Expenses are unusually large.

A. Where the amount of sales and distribution expense is unusually large in relation to manufacturing costs, it would become necessary not only to record the Sales Oncost separately from the Administrative Oncost, but to dissect it into appropriate sub-heads for the purpose of periodical comparison and control.

Every business has its own problems as to the proper classification of Sales and Distribution Overhead, and much will depend on factors appertaining to marketing and sales promotion efforts as also conditions as to delivery of goods. Generally, however, the following classification has been found to work satisfactorily:

1. Sales Administration	To cover the portion of administration cost applicable to Sales Department.
2. Sales Management	To cover cost of maintaining head and branch sales offices and management of sales activities.
3. Sales Representation	To include travelling representatives' salaries, commission and expenses.
4. Advertising and Publicity	To include cost of advertising and sales promotion efforts.
5. Stock warehousing	To cover cost of storage of saleable stock.
6. Packing and Dispatch	To include cost of packages, wrappers and packing department expenses.
7. Transport Charges	To cover cost of delivering goods to Customers.

Q. 103. What usual methods are employed for the recovery of Sales Overhead from the various cost units ?

A. The question of distribution of Sales Overhead amongst the various cost units must be considered in relation to the problems met with in each particular business. In general, however, any one of the following will be found to be a suitable method of distribution:

(1) A rate per each article or unit of production;

(2) A percentage calculated on the selling price of each article or production unit; or

(3) An apportionment over each cost unit on the basis of its factory cost.

Q. 104. Explain why it is necessary to classify the expense of Maintenance and Repairs, and sub-divide the same under appropriate heads in a large-scale works.

A. The proper classification and sub-division of Repairs and Maintenance charges in a large-sized factory is indispensably essential, firstly, in order to maintain a close check and control over the large amounts usually expended under this head by the different productive and non-productive sections of the works, and secondly, to enable a close and proper allocation of the expense to be worked out for the purpose of recovery from costs.

Separate Service Orders would have to be issued for the maintenance of each class of asset such as Office Building, Office Furniture and Equipment, Works Buildings, Works Machinery, Works Tools, Works Fixtures, Stores Building, Stores Equipment, etc., inasmuch as the maintenance charges attributable to each such asset will have to be separately arrived at.

In more important undertakings, the maintenance charges relating to Plant and Machinery will have to be further divided into several sub-accounts not only to arrive at the cost incurred under this head on the production plant of each department or section of the factory, but also to ascertain the charges incurred in maintaining each distinct type of service rendered by some sections of the plant. Thus, repairs to Power Plant, Laboratory Plant, Hydraulic Plant, Internal Transport Plant, Electric Lighting Plant, Delivery Vans, etc., will each have to be separately ascertained under distinct Service Order Numbers, quite apart from those issued for maintenance of Production Plant.

Even the Production Plant will have to be sub-classified into the machinery used by different departments or shops in order that the same may be included in the Factory Oncost of each such department or shop.

The importance of having separate Service Order Nos. for each separate piece of work can be seen when it is remembered that whereas repairs to Office Building will form part of the Office Oncost, those to the Works

Building will be included in the Works Oncost, and the repairs to Delivery Vans will form part of the Sales Oncost. Further, as the cost of each auxiliary service such as Power, Electric Lighting, Stores, Tools, Research, Internal Transport, etc., will have to be separately assessed for the purpose of their equitable allocation among the different sections of the works according to the benefits they have derived, the ascertainment of the actual maintenance cost of each of these must become indispensable.

A clear record of the Repairs and Maintenance Charges of each separate service and of each Productive Section, from period to period, will also prove considerably helpful for comparative purposes by way of control.

Q. 105. Enumerate the several methods employed for the purpose of recovery of Factory Overhead from the different jobs or cost units.

A. The following are the several methods usually employed for the purpose of recovery of Factory Oncost from the different jobs or cost units:

(1) On the basis of direct (productive) wages paid;
(2) On the basis of direct (productive) hours worked;
(3) On the basis of the running time of the machines, i.e. machine-hour rate;
(4) A combination of the machine-hour rate for machine expenses and of man-hour rate for other works expenses;
(5) On the basis of prime cost of the products;
(6) On the basis of output of each department; and
(7) On the basis of material cost of each product or group of products.

As any one or more of the above methods can be usefully applied under varying circumstances, it is necessary that the peculiar nature of the industry and the conditions obtaining in the different productive departments should be carefully considered and critically examined before deciding upon as to which method would work most equitably in any particular case.

Q. 106. Explain what is meant by the allocation of the Factory Overhead on the Direct Labour Cost Basis, and state the circumstances under which this method would work equitably.

A. Direct Wages or Direct Labour Cost Method.—Under this method, the amount of direct wages expended on any job is adopted as the standard of measure for the charge in respect of works oncost. It is most commonly used on account of its extreme simplicity.

The Direct Wage Rate is obtained by first ascertaining the percentage that the estimated works oncost attributable to a department bears to the amount of its productive wages for the year. Each job is then charged with this percentage on its direct wage cost to obtain its work cost.

Subject to proper departmentalization, this method will give fairly accurate results only where all the work is done by hand, where the rate of pay received by workers is fairly uniform, and where the use of machinery is more or less negligible. Thus, it can only be applied with advantage in a business where the same class of labour is employed on all the jobs, e.g. entirely skilled labour or entirely unskilled labour of the same class, or where the general proportion of skilled and unskilled labour employed on all the jobs is similar. Building Contracts, Road Works, etc. would be good examples. Where, however, it appears that the relative amount of wages varies materially as between one job and another, as where some jobs employ only skilled labour, others partly skilled and partly unskilled, and others unskilled, in continually varying proportions, it will be found that the allocation of works oncost based on the amount of wages paid would unduly burden such jobs which employ skilled labour, whilst it would fall unduly lightly on other jobs employing unskilled labour. For it is evident that if highly skilled and unskilled operators are employed in the same department, allocation of supervision expense should be in inverse proportion to the rate of wages, for the latter would need more supervision than the former. The result would be that the works cost of each individual job arrived at on the basis of direct wages would be misleading. In such a circumstance, the allocation based on the number of labour hours would meet the case more equitably.

Again, where the work is done partly by hand and partly by machinery, true costs are not possible by this method, as the job requiring the use of expensive machinery and the job requiring all hand-work will both have to bear the same percentage of works expense calculated on their relative direct wages. This will lead to wrong results, as it is evident that a job which requires the use of machinery should be charged with a larger measure of works expense than the one which requires little use or no use at all of machinery. It need hardly be pointed out that rent, power, plant maintenance and depreciation, and indirect material are all expenses which have a direct bearing on the size and nature of the machines, and not on the rate of pay received by the workers.

Q. 107. Explain the working of Factory Oncost Allocation on the basis of Direct Labour-hour or Man-hour.

A. Direct Labour-hour Method or Man-hour Method.—Under this method, instead of fixing the rate upon the total amount paid in wages, the oncost is allocated on the basis of the number of hours worked by the direct wage earners. The total number of direct labour hours of each department is ascertained and divided into the total works expenses attributable to that department, the resultant figure being what is called the Direct Labour Hour-rate. This method gives more accurate results than the percentage on direct wages, because it takes into account the element of time taken by the workers and the amount of oncost is not affected by difference in rates of pay. Thus, if two workers paid on piece-work method, are engaged upon similar work, and whereas one takes 20 hours to complete the job and the other takes 25 hours, the latter would use more power, supervision, plant maintenance and depreciation, light, etc. than the former. As the amount of oncost charged under this method would be in proportion to the labour hours, it would follow that the latter job will bear a larger measure of oncost than the former. This method thus provides against some of the anomalies which arise with the direct wages method.

The drawback of this method is that it fails to take account of the difference in size of the machines, and, therefore, it provides fairly accurate results in a business where the use of machinery is subordinate to the use of hand labour.

It must be noted that for the purpose of this method, only *direct labour hours* (i.e. number of hours the productive workers were engaged) are taken, and the number of hours worked by indirect labour is excluded. As a matter of fact, the amount of indirect labour will form one of the component items of Works Oncost.

Q. 108. What is meant by Machine-rate or Machine-hour Method of Works Oncost Allocation, and when is such method applied ? State also under what circumstance the Combined Machine-hour and Direct Labour Method can be usefully employed.

A. Machine-rate or Machine-hour Method.—Where the nature of the business is such that the whole of the machinery is continually employed in manufacturing operations, it is evident that, in that case, the time occupied by the machines would be a guide to the general works expenses incurred, and an hourly burden based on the number of working hours of the machines can in that case be more appropriately adopted. This method is thus found to be equitable and is particularly used in highly organised engineering businesses, where most of the work is done by costly machines. In such cases, from the standpoint of costing, the machines stand to become the controlling factor rather than the operators, as a large part of the total oncost expense centres round the machines and not the operators. The direct labour cost in such a concern being relatively a small proportion of the direct manufacturing cost in which the machinery maintenance and depreciation, tools and cost of running the machines are predominant, the machine-hour rate yields more accurate results.

Under this method, the total works expenses are first analysed into departments, and the amount of expenses attributable to each department is then distributed over the number of machines or group of machines in that department. This gives the proportion of expense per machine or a group of machines, and the figure is then divided by the number of productive hours it is estimated each machine or group of machines will run throughout the year at its full normal capacity. The result will be a machine-hour rate.

The most difficult part of the work in this connection is the ascertainment of the correct amount of expenses attributable to each machine or group of machines. In order to arrive at a correct allocation of expenses in this direction, the amount of works oncost of each department will have to be most carefully and scientifically analysed. There are some items which are directly governed by the nature of the machines, such as power consumed, repairs, maintenance and depreciation of plant and indirect materials consumed. There are other items which will bear allocation on the basis of the floor space occupied by the machines, such as maintenance, repairs and depreciation of building, insurance, rent and taxes of buildings.

The power expense will be apportioned on the basis of power consumed by each machine. Plant depreciation, repairs and maintenance in connection with each machine can be easily ascertained separately.

Miscellaneous supplies such as oil, beltings, cotton-waste can also be separately ascertained, where the machines are costly, by maintaining a record of stores issued to each machine, otherwise the same would be apportioned over the machines on some sound and reasonable basis.

In regard to expenses other than the above which are not so direct and cannot be definitely attached to particular machines, such as works management, organisation, and other indirect labour such as wages of watchmen, caretakers, shop cleaners, crane drivers, etc., the same may be allocated on some equitable basis having due regard to the nature of the business.

A great bulk of the factory expenditure is thus brought into complete control and is allocated most equitably. Besides, the ascertainment of the machine-hour rates provides clear and detailed information as to the expenses of operating each machine.

Records will have to be maintained in this case by the operators of the machines to indicate the time occupied by the machines on each job, and the job account is then charged with this number of hours at the hourly machine rate.

Combined 'Machine-hour' and 'Direct Labour' Method.—Where the work is done partly by machines and partly by hand labour, a combination of Machine-hour and Direct Labour Hour Method is used for the purpose of allocating the oncost charges. Such expenses as are inseparable from the running of the machines are allocated on the basis of the Machine-hour rate, and the other expenses which are not directly attached to the machines are allocated on the basis of the direct labour hour.

Q. 109. State exhaustively under what circumstances Works Expenses can be allocated on the basis of a percentage calculated on the Prime Cost of each job. Illustrate your answer by specific instances.

A. Percentage on Prime Cost Method.—This method is most inaccurate and unreliable of all, and yet it is the most popular on account of its simplicity. Under this method, the percentage which the works oncost bears to the total prime cost (i.e. direct material and direct labour) is ascertained, and each job is then charged with that percentage on its prime cost as its share of burden in respect of works oncost. As a rule, works expenses seldom, if ever, have any direct relation to the value of direct material used, and by applying to total prime cost a uniform percentage in respect of works oncost burden, a manufacturer opens himself to serious risks of getting altogether wrong information as to the ultimate costs.

The following illustration will serve to clearly indicate the fallacy of this method. If we assume that during a given period the total direct material consumed in manufacture of articles amounted to Rs. 50,000, the direct wages to Rs. 75,000 and the factory expenses to Rs. 1,00,000, the total factory oncost works out at 80 per cent of the total prime cost. We may further assume that included in the articles manufactured was a product whose material cost came to Rs. 800 and direct labour Rs. 200, and there was another whose material and labour cost worked out at Rs. 200 and Rs. 800 respectively.

Now, if the percentage of the factory oncost is calculated on the prime cost basis, the amount of oncost chargeable in both these cases will be the same as shown below:

First Article		*Second Article*	
	Rs.		Rs.
Direct Material ..	800	Direct Material ..	200
Direct Labour ..	200	Direct Labour ..	800
Prime Cost Rs.	1,000	Prime Cost Rs.	1,000
Factory Oncost 80 p.c. ..	800	Factory Oncost 80 p.c. ..	800
Factory Cost Rs.	1,800	Factory Cost Rs.	1,800

It is a matter of common knowledge that the Factory Expense of manufacturing any article has a direct relation to the number and nature of the manufacturing operations through which the material passes. Evidently, therefore, it may reasonably be inferred that, in the second case, where the labour cost forms an important factor, the material must have undergone a considerable number of manufacturing processes. It would equally follow, therefore, that it must have consumed factory rent, lighting, heating, power, depreciation of plant and supervision in a larger measure than in the case of the first article. It is clear, therefore, that this method of allocation of Factory Oncost by way of a percentage on the Prime Cost is incorrect and misleading in a case where material and labour cost of each individual product are considerably in varying proportions.

In view of the above facts, it may seem that the allocation of the Factory Expenses on the basis of labour cost of each article would be more appropriate in the cases quoted. Allocating the Works Expenses on the basis of the wages paid, the works cost of each article would work out as under:

As the direct wage for the period amounted to Rs. 75,000, and the total Factory Expenses covering the same period amounted to Rs. 1,00,000, the Factory Expense amounts to 133 1/3 per cent of the direct labour cost. The total cost in each case would appear thus:

First Article				*Second Article*			
	Rs.	a.	p.		Rs.	a.	p.
Direct Material ..	800	0	0	Direct Material ..	200	0	0
Direct Labour ..	200	0	0	Direct Labour ..	800	0	0
Prime Cost Rs.	1,000	0	0	Prime Cost Rs.	1,000	0	0
Factory Oncost 133⅓% of the Labour Cost ..	266	10	8	Factory Oncost 133⅓% of the Labour Cost ..	1,066	10	8
Factory Cost Rs.	1,266	10	8	Factory Cost Rs.	2,066	10	8

Comparing these figures with the cost as ascertained under the first method, we find that the first article was over-valued to the extent of Rs. 533-5-4 and the second article was under-valued to the extent of Rs. 266-10-8.

We will now take the case of a third article which cost Rs. 400 in material and Rs. 600 in direct labour, the Factory Expenses being 133 1/3 per cent of the wages cost, the same as above. In this case the Factory Cost will work out thus:

	Rs.
Direct Material	400
Direct Labour	600
Prime Cost .. .. Rs.	1,000
add Factory Expenses 133⅓% of Labour Cost ..	800
Factory Cost .. .. Rs.	1,800

The result obtained in this case is the same as in the first method. This is because the material cost of the article in question bears the same proportion to its labour cost as the *total material cost of the period* bears to its *total labour cost*. It follows, therefore, that under the method of allocating the Factory Expense on the Prime Cost basis, only those articles in which the proportions of material and labour costs are approximately the same as the proportions between the total material and total labour would be said to be properly priced; whereas those in which the proportion of material cost happens to be higher would be over-priced by being unnecessarily burdened with a larger measure of factory expense, and those in which the proportion of labour cost happens to be higher would be under-priced by being charged with a lower proportion of Factory Expense than would be deemed equitable.

Q. 110. Explain under what circumstances the allocation of Works Overhead would work equitably under the following methods:

(a) On the Basis of Output of each department; and

(b) On the Basis of a Percentage calculated on the cost of materials consumed on each job, product, or a group of products.

A. (*a*) **Output Basis Method.**—This method consists in allocating the oncost at the rate of so much per ton or other unit of production. The rate per unit of production is obtained by dividing the total estimated oncost by the total estimated output of units. In order to ascertain the oncost charge applicable to a job, the rate as above ascertained is multiplied by the output of units appertaining to that job.

This method can be usefully employed in a case where the class of output is constant, where the products have to undergo several chemical or other processes in the course of production, and where the workers have to attend to more than one job at a time.

(*b*) **Material Cost Basis.**—Under this method, the total Works Expenses for the period would be distributed amongst the products in the same proportion which the total Works Oncost bears to their total material cost. This method can be effectively employed only in cases where the material cost of each product or a group of products is far in excess of its labour cost, i.e. where very little direct labour is employed on costly material to turn it into a serviceable product. In order to secure satisfactory results under this method, other important conditions are that the same type of material is used in all products, and that such material is not subject to undue fluctuation in price.

Q. 111. How would you apportion the following expenses over the productive and non-productive sections of the business:

(1) Repairs & Maintenance;

(2) Electric Power;

(3) Electric Lighting;

(4) **Heating**;
(5) **Gas & Water**;
(6) **Consumable Stores**;
(7) **Steam & Hydraulic Power**;
(8) **Insurance on Buildings**;
(9) **Insurance on Plant**; **and**
(10) **Indirect Labour ?**

A. The basis employed for the apportionment of expenses would be as under:

(1) Repairs & Maintenance—by direct analysis.
(2) Electric Power—in proportion to H.P. hours or according to consumption return of each section.
(3) Electric Lighting—according to the number of lights, or meter, or floor area of each department.
(4) Heating—according to floor area or cubic capacity of each department.
(5) Gas & Water—according to consumption by each section.
(6) Consumable Stores—by direct analysis.
(7) Steam & Hydraulic Power—according to consumption.
(8) Insurance on Buildings—according to floor area occupied by each department.
(9) Insurance on Plant & Machines—according to capital values.
(10) Indirect Labour—by direct analysis.

Q. 112. On what basis would the following expenses be apportioned:

(1) **Building Expense**;
(2) **Stores Expense**;
(3) **Cost Office Expense**;
(4) **Wages Department Expense**;
(5) **Tools Expense**;
(6) **Internal Transport Expense**; **and**
(7) **Works Office Expense ?**

A. The following would be the basis of apportionment:

(1) Building Expense—according to area or capacity of buildings.
(2) Stores Expense—according to values or weights of issues, or number of requisitions.
(3) Cost Office Expense—according to direct labour hours, or direct wages, or any other equitable method.

(4) Wages Department Expense—according to number of workers in each department or direct labour amount.

(5) Tools Expense—by direct analysis, or according to direct labour amount.

(6) Internal Transport Expense—according to direct labour amount.

(7) Works Office Expense—according to direct labour amount, or direct labour hours.

Q. 113. How would you apportion the following:

(1) Employers' Liability Insurance;
(2) Depreciation on Buildings;
(3) Depreciation on Plant & Machinery;
(4) Time-keeping Expenses;
(5) Welfare Expenses;
(6) Overtime & Waiting Time;
(7) Works Management Expense;
(8) Administrative Expense;
(9) Works Supervision; and
(10) Experiment & Research Expense?

A. The following would be the basis of apportionment:

(1) Employers' Liability Insurance—according to total wages of each department.

(2) Depreciation on Buildings—according to capital values or floor space.

(3) Depreciation on Plant and Machinery—according to capital values.

(4) Time-keeping Expense—according to total labour amount of each department.

(5) Welfare Expense—according to number of workers, amount of wages, or labour hours.

(6) Overtime & Waiting Time—by direct analysis, or according to direct labour hours.

(7) Works Management Expense—according to service rendered, or direct labour amount.

(8) Administrative Expense—according to direct labour amount or hours, or in ratio of works oncost or works cost.

(9) Works Supervision—according to direct labour amount or hours.

(10) Experiment and Research Expense—according to service rendered.

CHAPTER VII

DIFFERENT METHODS OF COSTING

Q. 114. Explain why it is necessary to devise different methods of Costing for different industries, and enumerate the several methods employed.

A. Just as it is impossible to devise a set of financial records as would be equally suitable to a banker, a railway company or a retailer, it is equally hard to construct a model set of cost accounts which would be serviceable alike to a builder, a manufacturer of engineering specialities, or a chemical food products company. Various methods of cost finding are thus used in practice, depending upon the nature of the industry and the class of products made, among these being the following:

Multiple Costs.—This system of cost accounts is applicable to undertakings where a variety of products are manufactured, which bear little or no apparent relation to each other in cost, in kind, and in the number and variety of processes necessary for completion, and in which standardisation in parts is carried to a high degree of specialisation in manufacturing. Manufacturers of engineering specialities, agricultural implements, cycles, boots, furniture, hosiery industries, gramophones, clothing industries, typewriters, etc., apply this method of costing.

Terminal Costs or *Job* or *Order Costs* are employed to show the cost of each separate contract or job or order for definite work to be done, and in which the costing is definite and terminating on completion of the work. This form of costing is adopted by Builders, Contractors, Ship-builders, etc.

Departmental Costing is used where a standard product is manufactured and where it is desired to ascertain the cost of the output of each department separately. The method is correlated to *Job* or *Process Costing.*

Single or Output Costing or *Unit Costs* is applied to the method of costing employed in undertakings which supply a uniform product rather than a variety of products, and where it is desired to find the actual cost of one unit, weight, measurement, or container, such as per ton, per yard, per barrel, or per sack. It is applicable to mines, quarries, collieries, breweries, etc.

Process Costs are applied where the material has to pass through several processes or operations before obtaining a final product or result, where there are by-products in many cases at different stages, and where it is desired to ascertain the cost of each process of manufacture. They are applicable to chemical industries, food products, etc.

Operating Costs is the term denoting the system of costing employed by transport undertakings and by other public utility concerns, where services are rendered rather than products manufactured, such as railways, tramways, bus companies, electric, gas and water undertakings. A railway company may ascertain cost per ton mile or passenger mile; an electric company per unit of electricity generated.

Whichever method of cost-finding is employed, it is of the utmost importance that the cost accounts should contain accurate records of all the amounts consumed by the concern during any given period, whether such consumption is represented by cash, materials, or consumable expenses incurred. The total revenue expenditure of a manufacturing concern during any one financial period would then represent the cost of the products (finished or partly-finished) manufactured during the same period. The system adopted must result in this total expenditure being distributed over the whole of the work executed (whether completed or in progress), by a process of most minute and critical analysis of each distinct head of expenditure. The result will then be the true cost of each article or a group of products.

Q. 115. State clearly what you understand by Single or Output Costs.

A. Single or Output Cost System is used in businesses where a standard product is turned out and it is desired to find out the cost of a basic unit of production. The method will thus help towards cost-finding per a ton of coal raised in a colliery, per a ton of steel at a steel works, per a sack of flour in a flour mill, per a yard of cloth in a textile factory, per lb. of yarn in a spinning mill, or per a barrel of beer in a brewery. It is also adopted by brick works, cement works, quarries, and gold and copper mines.

Even in businesses turning out standard products on a substantial scale, it is usually found desirable to divide the entire works into separate departments, each department handling a certain range of operations, so as to ensure a closer control over expenditure in material and labour. It may also be that while manufacturing a uniform product, it is deemed necessary to ascertain the cost of the several processes or stages of production, in which case the Process Cost System may be further utilised.

Under the Single Costing System, the analytical information required in respect of direct material and wages, and the oncost burden will be in relation to each single unit of production.

As the whole of the expenditure is practically incurred on one uniform type of production, a detailed classification and analysis of expenses as would be necessary in case of Job Costing is not ordinarily called for. Where, however, the single product is manufactured in different sizes or grades, the analytical information must at least enable a fair apportionment of overhead burden over the different sizes or grades.

Q. 116. Explain what is meant by the system of Process Costing, and give a brief outline of how these are maintained.

A. Process Costs are applied in industries in which the raw material has to pass through a number of distinguishable manufacturing processes or operations before the product reaches its finished state, where there are by-products in many cases at different stages, and it is desirable to ascertain the cost of each process.

Process Accounts are also employed by Engineering Works where articles are manufactured by mass production under repetitive methods, in order to give the cost of each unit at its various stages of production, so as to secure proper control and efficiency of a higher order.

The System of Process Costs is particularly applied in those industries where manufacturers in certain lines have occasions sometimes to get particular processes worked under contracts by outsiders who have specialised in the type of work. Under such a circumstance, it would become highly necessary for them to maintain reliable records as would help faithful comparison of their own cost of each separate process with the rates they may be charged for similar work when performed by an outside agency.

In order to install a system of Process Costs, the first step is to classify the various operations or processes commencing with the raw material, and following through the various stages of manufacture till it emerges as a finished product. The proper departmentalisation of the factory for the purpose of initiating a sound system of process costing must call for a thorough understanding and practical insight into the technicalities of the various manufacturing processes appertaining to the particular industry concerned.

As the function of Process Costs is to arrive at the cost of the products at various well-defined stages of manufacture, there is opened a separate account for each process, to which all expenditure incurred thereon is charged. Each such account is debited in quantities and values of the direct material issued, at the end of each week or month, as may be determined. Similarly, the direct wages for each process or stage of production will be debited to the appropriate account, for the corresponding period. Direct charges attributable to any process or operation will also be debited to the relative process account. Each such account will then be charged with its appropriate burden in respect of works and administration expenses.

In some businesses, by-products come into being as a result of some process. Where such by-products exist, their value should be credited to the process account in which they arise, so as to reduce the cost of that particular process. Each process account will thus be credited with the quantity and value of the by-products or disposal of waste produced. The result will be the actual cost of each process and the quantity of the product obtained in the intermediate stages of production, which will be carried forward to the next process or operation. In other words, the material as modified in each process becomes the "raw material" of the immediate subsequent process, until the product is finally completed.

The advantage of this method consists in obtaining control of the actual cost of each process or stage of manufacture as also the cost of the final product, by regular comparison from one period to another.

Q. 117. Describe in detail how By-products are treated in Process Costs.

A. As by-products result in a majority of continuous process industries, an apportionment of the expenditure between the process concerned and its by-product, when separated from the main product, becomes necessary. It is in the proper valuation of the by-products that difficulties arise, and the greatest possible care needs to be taken in this direction.

Where the by-products have a ready market, the basis of their valuation will be the amount realised on sale or the market price, and it is with such value that the account of the process which produced the by-product will stand to be credited. Where, however, the by-product is utilised by the concern for the manufacture of some other products, the whole of the expenditure involved in the particular process will have to be most carefully and accurately apportioned over the main product and by-product on a logical and consistent basis, so as to allow for an approximately correct valuation of each.

Where the total quantity of by-product is not sold or utilised for other purposes, as soon as it results from a particular process, a stock account for such by-product will have to be maintained. The account will be debited in quantity and with market price or the value as ascertained on some definite and reliable basis, and the corresponding credit will be given to the process account from which it resulted. On sales being effected, or on part quantities being utilised for consumption, the stock account of the by-product will get the necessary credits. Any difference that might thus arise may be credited to works expenses account.

Where the by-products require further processing, the same, having been valued on some most equitable basis as ascertained by those possessing intimate technical knowledge of the processes, should be transferred to its relative process account.

A practice seems to prevail in some manufacturing concerns of adding a certain percentage to the actual cost of the process, before its transfer to the next process account, if their own performance is cheaper than what similar process being worked by outside firms would cost. Such a procedure is objectionable on the ground that it introduces outside elements into costing thereby making costs more complicated. Besides, the system in such a case would fail to reflect the true ultimate cost of the product when it has finally emerged as a saleable article.

Q. 118. What are Contract Costs, and how are they maintained ?

A. The system of Cost Accounting employed by Constructional Engineers, Building Contractors, Ship-builders, Dam and Bridge Builders, and General Contractors is known as Contract Costs. As the object in such cases would be to indicate the actual working results of each contract separately, a separate account for each contract will have to be opened.

The expenditure incurred on each such contract and directly attributable thereto in shape of direct materials, direct labour and other direct charges will be debited directly to its relative account. The other expenses relating to general workshops and sundry stores and indirect labour, as also the administration and establishment charges would have to be analysed and allocated to the different contracts worked simultaneously, on some equitable basis, so that each contract may stand to get its fair charge in respect thereof.

As it so happens with such contractors, that the number of contracts undertaken and worked during each year is usually small, the necessity of maintaining a separate set of Cost Books can be obviated by arranging the Financial Records in such a manner as would at once serve the purpose of both the sets of accounts. This would, of course, necessitate the maintenance of several subsidiary records such as Wages Abstract, Materials Abstract, etc., as would give analytical information in regard to the direct labour and direct materials employed on the different contracts. A special Contract Ledger would also be required which would contain a separate account for each Contract showing in details the several items consumed in relation thereto from time to time. This will call for special rulings as would enable most detailed information to be obtained in regard to each Contract easily and promptly.

Q. 119. Explain how the following will be dealt in Contract Costs:
- **(a) Materials issued to Contracts ;**
- **(b) Materials returned from Contracts to Stores ; and**
- **(c) Transfers of materials from one Contract to another.**

A. (a) **Materials issued to Contracts.**—All materials would be issued from the Stores against Material Issue Requisitions signed by the foreman or supervisor in charge of each contract. Materials purchased specifically for the contracts will be debited direct from the Purchases Journal to the appropriate Contract Accounts. Material Issue Requisitions for materials issued from stores will be analysed at the end of each month, and the relative monthly total of the Materials Abstract will be debited to the account of each contract concerned. The Purchases Journal must, of course, be so ruled as to show the special purchases separately from the materials purchased for stores.

(b) Materials returned from Contracts to Stores.—The return of unused materials from contracts to stores, will be evidenced by Stores Returned Notes.

A monthly analysis will have to be made of the Stores Returned Notes, and the analytical total thereof appertaining to each contract will be credited to the respective Contract Account in the Materials Returned Column.

(c) Transfers of Materials from one Contract to another.—An analytical Monthly Summary of Transfers of Materials from one contract to another will also have to be made from the Material Transfer Notes, and the contracts receiving the materials will be debited, and those transferring the same will be credited with their respective analytical totals.

The Materials Issue Requisitions and the Materials Returned and Transfer Notes will all bear reference to the particular contracts in respect of which they are used. These will all be properly priced and extended by the Cost Office before being analysed.

Q. 120. Give a brief outline of how the following are dealt with in Building Contract Costs:

(a) Direct Wages expended on Contracts; and

(b) General Establishment Overhead.

A. (a) Direct Wages Expended on Contracts.—The labour attributable to each building contract will be traceable by the Contract Number or Name being noted on each weekly Time Sheet or Job Ticket, which will also indicate the nature of the work performed and the number of hours spent thereon by each worker. These Time Sheets or Job Tickets will be duly authenticated by the foreman or supervisor of each contract.

A Wages Abstract would be prepared at the end of each month, which will serve to indicate the wages paid on account of each contract, in order that each such account concerned may be debited with its relative amount. The Wages Abstract or Analysis, apart from showing the total monthly wages for each contract, may also be further classified to show these as appertaining to each distinct class of work performed, such as brick-laying, stone-masonry, carpentry work, flooring, roofing, etc.

(b) General Establishment Overhead.—There will be several items of expenses of a general nature which cannot be directly attributed to any contracts in particular. These will have, therefore, to be apportioned over the contracts worked during each period, on some equitable basis, as under:

(*a*) Salaries of manager or constructional architect or engineer—on the basis of the cost of work done on each contract, or in accordance with the time spent on each contract;

(*b*) Store-keeper's Wages and Store-room Expenses—on the basis of the value of materials and stores consumed;

(*c*) Wages Office Expenses—on the basis of the amount of wages, or the number of labour hours;

(*d*) Other Administrative and Office Expenses, such as salaries to Clerical Staff, Telephone, Printing and Stationery, Advertising, Office Rent, Lighting, Insurance, etc., would be allocated on the basis of either the cost of the work done on each contract, or on the basis of labour hours. The labour-hour basis for the allocation of all Indirect Expenses has generally been found in practice to be more suitable than the other methods.

Where any hire has been paid for the use of heavy plant for a contract, the hiring charges should be debited direct to the Contract Account in question.

Q. 121. How are the following treated in Contract Accounts:
(a) Amounts received from Contractees; and
(b) Architect's Certificates for value of work done?

A. (a) Amounts received from Contractees.—The amounts received from each contractee on account of the contract, from time to time, should be credited to the Contractee's Personal Account, and not to the Contract Account. It is only when a contract is completed and certified as such by the contractee's architect, that the full contracted value will be debited to the Contractee's Personal Account and credited to the Contract Account in question. The Contractee's Account, having been credited with the amounts as and when received, and debited with the full contract price on completion, will then show the balance representing the final amount due by him to the contractor. When a contract is partly done and it is desired to ascertain the profit on the portion worked, the Work-in-Progress Account would be debited with the value of the certificates received to that date, and the Contract Account would be credited therewith. The entry will be reversed immediately at the commencement of the succeeding period.

(b) Architect's Certificate for value of work done.—To enable the contractor to receive amounts from the contractee from time to time in the case of large contracts, an arrangement usually entered into is that the work done by the contractor be periodically measured and certified by the contractee's architect, and the contractor, be paid 80 or 90 per cent of the values of such certificates. The balance would be retained as a guarantee against fulfilment of the contract within the stipulated time, and will become payable on completion.

No entries need be passed in regard to the values of the Certificates received from the architect from time to time, except when it is desired to ascertain profit or loss on the contract. These Certificates appertaining to each contract should be numbered consecutively and filed carefully for reference.

When the contract is completed in the same accounting year in which it was commenced, the full contract price will be credited to the Contract Account and debited to the Contractee's Account. The Balance on the Contract Account will now show profit or loss, which will be transferred to Profit and Loss Account.

In the case of an incomplete contract, when it is desired to bring into account the profit or loss made on the portion of work done, the total value of certificates received to the date of balancing will be ascertained and adjusted by means of an entry debiting Work-in-Progress Account and crediting the particular Contract Account. The entry will be reversed at the commencement of the succeeding period.

Q. 122. State how the adjustments in regard to the following items would be made in Contract Costs:

(a) Materials lying on site unconsumed;

(b) Special Plant or Tools employed on a contract; and

(c) Additional work done subsequent to last Certificate from the Architect.

A. (a) Materials lying on site unconsumed.—Where it is desired to find out profit or loss on an incomplete contract, and there are materials (already charged to the contract) lying on site unconsumed, these will have to be valued at cost and brought into account by debiting Work-in-Progress Account and crediting the particular Contract Account. The entry will be reversed immediately at the commencement of the succeeding period.

In the case of completion of a contract, if there are any such materials, the entry necessary to adjust these would be to debit Materials Account (as these will have to be returned to the Stores), and credit the Contract Account. The excess debit to the Contract Account in regard to the materials supplied and not utilised will thus be adjusted.

(b) Special Plant or Tools employed on a Contract.—If special plant and tools have been supplied for the purpose of any contract, the full cost of such plant or tools should be debited to the Contract Account in the first instance. At the time of balancing, when it is desired to bring into account profit, on an incomplete contract, such Plant and Tools will have to be revalued, and with the depreciated value thus ascertained, Work-in-Progress Account will be debited and the Contract Account will be credited. The Contract Account will thus stand charged with the depreciation on plant and tools occasioned by their use on the Contract. As the same plant and tools would still be used on the contract, the above entry will be reversed at the commencement of the succeeding period.

In the case of a completed contract, the depreciated value of such specific plant and tools will be adjusted by debiting Plant Account and Tools Account with their respective values (as these will now be returned to the works), and crediting the Contract Account concerned.

(c) **Additional Work done subsequent to last Certificate from the Architect.**—It may be that the last Certificate measuring and valuing the work done may not coincide with the date of balancing, and a substantial amount of work done on an incomplete contract may have remained uncertified. Before ascertaining the profit on such incomplete contract, it will be necessary to ascertain the cost of the work done and not certified and bring the same into account by debiting Work-in-Progress Account and crediting the Contract Account. The entry will then be reversed at the commencement of the next period.

Q. 123. Explain exhaustively the method generally employed in taking profit on Uncompleted Contracts.

A. Where some contracts are not completed in the same accounting year in which they were commenced, a question arises whether or not profit on uncompleted contracts should be taken into account at the time of closing the books for the year. Theoretically, it may not be advisable to take into consideration profit on uncompleted contracts, but in practice, this rule cannot be rigidly followed inasmuch as some contracts may take several years to complete, and it will not seem sound and equitable to take credit for the profit only in the year in which the contract is finished. In view of this fact, the profit on partly completed contracts is ascertained as explained below.

When only a very small portion of the work is done, it is neither desirable nor sound to bring into account profit on the portion worked, and the Contract Account must then be closed by balance. In such a case, the amount expended on account of the contract to the date of balancing will be transferred to the Work-in-Progress Account and shown on the assets side of the Balance Sheet *less* any cash received from the contractee on account of the work done.

No definite rule can be laid down as to at what stage of the work it would be safe to take credit for the profit on incomplete contracts, as so much would depend on the nature of the contract and the actual facts and circumstances then prevailing. The general rule, however, that can be safely laid down is that no profit should be ascertained unless at least more than one-third of the whole work has been completed, and all likely contingencies in regard to the remaining work can be safely predetermined.

It is only when the contract has sufficiently advanced that it will be possible to foresee clearly enough the future position by way of increase in the cost of labour or material and other contingencies likely to effect the ultimate profit on the contract, such as fines, if any, payable in case the contract is not completed in time. All such possibilities can then be taken into account, and this is done by reserving a portion of the profit on the partly completed work to cover such future contingencies, and taking credit for the balance of profit only in the Profit and Loss Account. In such a circumstance, the actual profit made on the contract to date is ascertained by taking the total value of the Architect's Certificates so far received thereon and deducting from it the actual amount expended on the contract. If any further work has been done after the receipt of the last certificate from the architect, the cost thereof must be deducted from the total expenditure, for the purpose of finding out the profit made on the work certified. The work not certified should be valued at cost and will form part of the work-in-progress.

It is thus clear that the profit on an incomplete contract should always be brought into account on most conservative basis leaving sufficient amount to meet unforeseen contingencies that might arise in respect of the portion of work remaining to be done. Such a contingency is usually provided for by taking credit for only two-thirds or three-fourths of the profit ascertained, and carrying forward the balance in the next year's accounts.

With the amount of the profit that is decided to be brought into account, the adjustment would be to debit the Contract Account and credit the Profit and Loss Account. The portion of profit, which is decided to be carried forward in the next year's books, would be debited to the Contract Account and credited to the Work-in-Progress Account. The entries to the Work-in-Progress Account will be reversed at the commencement of the succeeding period.

It need hardly be mentioned that adjustments in regard to materials unconsumed and lying on site, Architect's Certificates, Special Plant used, etc., will all have to be made before ascertaining profit or loss on any contract.

Q. 124. Explain clearly to what purposes Work-in-Progress Account is used in Contract Costs.

A. To this account will be made all the several adjustments in regard to incomplete contracts at the time of balancing, when it is desired to bring into account profit or loss on the portion of work done. These various entries will then be immediately transferred to the respective Contract Accounts at the commencement of the next period, as already explained.

There will be only one Work-in-Progress Account on which all the above adjustments will be made. This account will generally show a debit balance, and will appear on the assets side of the Balance Sheet after deduction therefrom of the amounts received from the contractees on account of incomplete contracts (which amounts will be appearing on the credit of the respective contractees' personal accounts) thus:

	Rs.	Rs.
Work-in-Progress Account	..	..
Less amount received on account	..	..

It needs to be pointed out that no adjustments should be made in respect of depreciation on specific plant and tools, or in regard to materials on site, or additional work done subsequent to receipts of Architects' Certificate, when it is not desired to ascertain profit on an incomplete contract. In such a case, the debit balance on the Contract Account will be transferred to the Work-in-Progress Account, and the whole total will appear under the latter heading on the Balance Sheet. The whole of such amount transferred to Work-in-Progress Account at the end of each period will be reversed to its relative Contract Account immediately at the commencement of the succeeding period.

Q. 125. Give a comprehensive list of industries which can use the Process Cost System advantageously.

A. The following types of industries find Process Cost Accounting easily adaptable and advantageous:

Canning Industries,
Oil Refineries,
Soap Manufacture,
Paint & Varnish Products,
Dye Works,
Biscuit Works,
Chocolate & Confectionery,
Food Products,
Medicines,
Breweries,
Rubber Products,
Bakeries,
Chemical Industries,
Tanning Factories,
Coal and Coke By-products,
Textile Industries,
Bleaching and Finishing Works,
Potteries,
Paper Mills.

Q. 126. Give an exhaustive list of undertakings where the Multiple Costs System is generally applied, and explain the working of such a system.

A. The following enterprises usually employ the Multiple Costs System:

Hosiery Industries,
Engineering Specialities,
Gramophones,
Typewriters,
Motor Cars,
Engines,
Machine Tools,
Cycles,
Boots and Shoes,
Furniture Manufactures,
Agricultural Implements,
Wireless Sets,
Aeroplanes.

The system of Multiple Costs is adopted where different types of products are manufactured which bear little or no apparent relation to each other in cost, in kind, and the number and variety of processes necessary for completion, and where the raw materials pass through quite different processes and are subsequently assembled into one or more finished products. From the list of businesses applying this method as given above, it must be clear that this system is necessitated where each complete product is complex in nature and is made up of numerous components differing widely from each other in type, value, material used, and in manufacturing processes and operations. As separate costs will need to be compiled for each variety of articles and its relative components, varied and special methods of costing would be found necessary in some sections of the works to meet specific requirements. As several costing methods are thus employed in the same works, the system as a whole is known as Multiple Costs.

Q. 127. What method of costing would you apply to the following:

(a) Printers and Publishers;
(b) Boot and Shoe Manufacturers;
(c) Furniture Manufacturers;
(d) Motor Bus Service
(e) Spinning and Weaving Mills;
(f) Hosiery Works;
(g) Soap Manufacturers; and
(h) Paint Manufacturers?

A. The method of costing applicable to the industries mentioned below are as under:

(*a*) Printers and Publishers—Job Costing.
(*b*) Boot and Shoe Manufacturers—Multiple Costing.
(*c*) Furniture Manufacturers—Job or Multiple Costing.
(*d*) Motor Bus Service—Operating Costs.

(*e*) Spinning and Weaving Mills—Process Costs.
(*f*) Hosiery Works—Multiple Costs.
(*g*) Soap Manufacturing—Process Costs.
(*h*) Colliery—Single Costs.
(*i*) Paint Manufacturers—Process Costs.

Q. 128. State the methods of Costing applicable to the following:

(a) Slate Quarry;
(b) Iron and Steel Rolling Mill;
(c) Gas Works;
(d) Oil Refinery;
(e) Electric Tramway Co.;
(f) Pig Iron Production;
(g) House Building;
(h) Brewery;
(i) Chemical Industry;
(j) Flour Mill; and
(k) Railways.

A. The methods applicable will be as follows:

(*a*) Slate Quarry—Single or Output Costing.
(*b*) Iron and Steel Rolling Mill—Process Costs.
(*c*) Gas Works—Operating or Working Costs.
(*d*) Oil Refinery—Process Costs.
(*e*) Electric Tramway Co.—Operating Costs.
(*f*) Pig Iron Production—Output Costs.
(*g*) House-Building—Contract Costs.
(*h*) Brewery—Single Costs.
(*i*) Chemical Industry—Process Costs.
(*j*) Flour Mill—Single Costs.
(*k*) Railways—Operating Costs.

Q. 129. Describe in full details which items would be treated as Capital Expenditure and which as Revenue Expenditure in the preparation of Colliery Costs.

A. In the ascertainment of Colliery Costs, the following points need to be carefully noted:

(1) The cost of plant, equipment and all other tools and appliances represent capital expenditure;

(2) All expenses incurred towards the development of mine till the coal is won would also be treated as part of the capital cost;

(3) The development expenses cease once the mine is developed, and all subsequent expenses relating to winning of coal should be classed as operating charges;

(4) As the value of the mine depreciates year after year in due proportion to what the annual output bears to the total estimated capacity of the mine,, it is necessary to treat this depreciation as an item of cost by including it in the operating cost;

(5) The entire capital cost should be divided by the total estimated tonnage in order to arrive at the rate per ton to be charged to the cost, so that the total capital sunk may be recovered;

(6) All sums expended in repairs and replacements should form part of the operating costs;

(7) All extensions to the mine should be treated as further capital expenditure, and should be recovered from costs in the same manner as the original capital cost;

(8) When any unusually heavy expenditure has to be incurred by way of replacement of equipment such as tubs, old timber and maintenance of old tracks and laying of new ones, etc., the same cannot be charged against the operating costs of the output for the period, but may be spread over a reasonable number of years; and

(9) All other expenses incurred on working the colliery, including the works and office establishment charges, will be treated as Revenue Expenditure.

Q. 130. Explain what you understand by Standard or Predetermined Costs. Enumerate their advantages.

A. Standard Costs may be defined as predetermined costs which are likely to be incurred if the activities relating to plant, production and technique, material, labour, supervision and tests were more efficiently organised and utilised under a given set of conditions which are constant and practicable, and not idealistic and unattainable. The conditions essential for effective and reliable Standard Costs are, firstly, that the basis of output to be taken for such purpose should be the full normal capacity of the concern, and secondly, the material, labour and the works and office overheads chargeable against the actual costs of each job, process, or other production unit are capable of being compared with the cost standards with a view to measure the productive efficiency of each department or functional unit, in order that any deficiencies or lapses from the set standards of performance may be brought to light to serve as a check on the effectiveness of the organisation as a whole.

The advantages of standard costs may be summarised as under:

(1) They are an invaluable aid to management in setting up production policies and technique as would result in utmost economy;

(2) They prove considerably helpful in giving reliable estimates and quotations and in fixing up sale prices of products;

(3) They afford a close and effective check on the numerous expenses of production, services, supervision and management as actually incurred by constant comparison with their corresponding predetermined standards;

(4) They serve as a close control and check on the departmental heads and those in charge of functional activities to keep their material, labour and oncost charges within the limits as standardised;

(5) They reveal all wastes, leakages and spoilt work;

(6) They act as an incentive to all in executive and subordinate positions to attain greater efficiency and better results;

(7) They bring to light the increase in cost per unit due to under-production, and thus render the adjustment of overhead burden in future costs necessary; and

(8) They serve as a medium for measuring factory efficiency in all its numerous activities.

Q. 131. What are Operating Costs? Draft a specimen statement of Operating Costs of an Electricity Generating Station.

A. This system of costing is applied by undertakings which render services, rather than manufacture goods, and where there is a single unit as in Single Costs, but of a different type, such as Railways, Tramways, Bus Companies, Electric Companies, Gas and Water Undertakings, Carriers, etc. The method of ascertainment of cost is on similar lines to Single Cost System, but the unit for measuring costs will be a train-mile, car-mile or ton-mile, as the case may be. A good costing system in such cases is necessary for testing the administrative efficiency.

STATEMENT OF OPERATING COST OF AN ELECTRICITY GENERATING STATION

Units Generated..................................For the quarter ended...............

Description of Expense	Amount			Cost per Unit		
	Rs.	a.	p.	This Quarter	Same Quarter Previous year	Last Quarter
GENERATION OF ELECTRICITY:						
Salaries of Engineers—proportion						
Wages of Generating Station						
Oil, Waste, Water, Engineroom Stores						
Compensation—accidents						
REPAIRS & MAINTENANCE:						
Buildings						
Engines, etc.						
Dynamos						
Accumulators						
Other Machinery						
Sundry Expenses						
Total Generation Expense						
DISTRIBUTION EXPENSES:						
Salaries—proportion						
Wages						
REPAIRS & MAINTENANCE:						
Mains						
Apparatus on Consumer's Premises						
Distribution Stations						
Sundry Expenses						
Total Distribution Expense						
PUBLIC LAMPS:						
Repairs						
Renewals						
Total Public Lamps						
MANAGEMENT EXPENSES:						
Management Salaries						
Directors' Remuneration						
General Establishment Charges						
Rent and Taxes						
Audit Fees						
Legal Expenses						
Total Management Expense						
Total Cost for Quarter						

CHAPTER VIII

COST RECORDS, LEDGER ACCOUNTS AND ENTRIES

Q. 132. Give the main points of difference between a Cost Account and a Cost Sheet, and show what purposes they serve respectively.

A. A Cost Account represents a separate account for each Job, Process, Contract or other cost unit maintained in the Job Cost Ledger in order to ascertain its final cost and disclose at the same time details as to the constituent elements making up the total cost. Cost Accounts are usually recorded under the Double-Entry System in order to provide a check on the transactions recorded in the Cost Books, and to serve as an easy means to reconciliation with the results as indicated by the Financial Records.

A Cost Sheet is a tabulated statement prepared usually to indicate the detailed cost of the total output or production for a given period. It does not form part of the Double-Entry Cost Accounts. It is usually provided with additional columns to enable comparisons to be made of the current costs with those of the immediate preceding period and with the corresponding period of the previous year. Further details usually inserted in Cost Sheets relate to the cost per unit of production or output and the percentage which each expense bears to the total cost.

The term Cost Sheet is also applied to a similar statement prepared from Cost Account of a particular operation, job, process or contract to give further detailed comparative information in relation thereto in regard to previous costs and percentages of expenses.

Cost Sheets serve a useful purpose of comparison of costs from period to period so as to bring to light any variation in costs, and disclose leakages. Cost Sheets as well as Cost Accounts are also invaluable for filling in tenders while giving estimates and adjusting selling prices.

Q. 133. Give a list of the Principal Records usually maintained in any system of Cost Accounting.

A. The following are the Principal Records used in any system of Cost Accounts:

(1) Cost Journal,
(2) Works Order Ledger, or Job Cost Ledger,
(3) General Cost Ledger,
(4) Stores Ledger, or Stock Cards, and
(5) Finished Stock Ledger.

Q. 134. Explain the purposes served by the Cost Journal and the Job Cost Ledger.

A. Cost Journal.—Where the Job Cost Ledger and the General Cost Ledger are to be kept on the double-entry principles, all the entries therein should pass through a Cost Journal. It is through this Journal that all the charges in respect of Material, Labour and Oncost to the various Cost Accounts in the Job Cost Ledger and their corresponding credits to the several accounts in the General Cost Ledger will be passed. Through the same Journal will be passed entries relating to transfers made from one account to another.

Job Cost Ledger or Works Order Ledger.—There will appear in this Ledger a separate account for each job, works order, a group of products, a productive department, or other unit of production. Each such account would be provided with debit columns for Direct Materials, Direct Wages, Chargeable Expenses, Works Oncost and General Oncost so as to indicate details of the component elements in the cost of each job or cost unit. Where need be, further information may be accommodated in respect of "Machine Number", "Number of Machine-hours", and "Number of Man-hours". In many cases, such a provision will greatly facilitate the calculation of the oncost chargeable to any job concerned, where such oncost is allocated on the basis of man-hours or machine-hours.

The credit in respect of any material transferred to other job or returned to stores may be entered to the debit side in red ink and may be deducted from the total debits, so that the actual cost of the materials consumed may be seen at a glance.

Where it is desired to show profit or loss on each job, a credit column will also have to be provided. The credit column can then be utilised only for showing the Sale Price of each Works Order.

It needs to be pointed out that it is only when a job is completed that it is charged with its legitimate share of oncost. All incomplete jobs at the end of the period will be transferred to Work-in-Progress Account, and the oncost allocation in respect of all such jobs will be provided for on Works Oncost Suspense Account and Office Oncost Suspense Account. In regard to completed Jobs, there will be further credits with their relative Sale Prices in order to ascertain the profit or loss on each separate Job or Works Order Account.

Q. 135. Explain the uses of the General Cost Ledger, the Stores Ledger and the Finished Stock Ledger respectively.

A. General Cost Ledger.—This Ledger takes the place of the Nominal Ledger under any costing system. It will contain all the necessary Total or

Control Accounts for the entries appearing in the Job Cost Ledger so as to satisfy the principles of Double-Entry on the one hand, and to form a connecting link between the Cost Accounts and the Financial Accounts, on the other. The Accounts to be found in this Ledger will be:

(1) Direct Materials Account.
(2) Direct Wages Account.
(3) Chargeable Expenses Account.
(4) Indirect Materials Account.
(5) Indirect Wages Account.
(6) Works Oncost Account.
(7) Office or General Oncost Account.
(8) Sales Oncost Account.
(9) Work-in-Progress Account.
(10) Separate Oncost Suspense Accounts for the amounts attributable to Work-in-Progress in respect of Administrative, Works and Sales Overheads.
(11) Finished Goods Account.
(12) Stock of Finished Goods Account.
(13) Completed Jobs Account.
(14) Profit or Loss on Completed Jobs Account.
(15) Sales from Stock Account.
(16) Profit or Loss on Stock Sales Account, and such other Control Accounts as may be deemed necessary in each particular case.

Stores Ledger.—In this Ledger will be recorded all incomings and withdrawals of stores, and the record will thus serve the most useful purpose of controlling the movements of all the articles in the store-rooms. A separate account would be opened in this Ledger for each type and grade of material with rulings as would give the whole of the detailed information as to the quantities received, the issues thereout and the balances on hand from time to time.

Finished Stock Ledger.—In this ledger will be found a separate account for each type of Finished Article, and all the finished articles received from the Manufacturing Departments and issued to the Sales Department will be entered therein. The stock on hand of each Finished Article from day to day will be represented by the debit balance on each such Account.

Experience has proved the necessity of maintaining all the Ledgers and even some of the subsidiary records used for costing on Loose-Leaf Form or under the Card System instead of bound books, so that several members of the staff may be engaged in writing up any one record simultaneously in order to expedite the work. Besides, under the Loose-Leaf or Card System, a continuity of record would be secured by removing the leaves or cards relating to orders or jobs that have been completed, and filing these in a binder kept for such purpose. The current records would thus be relieved of all dead matters, and the annoyance and inconvenience occasioned by constantly having to turn pages affecting accounts no more in use will be obviated. Further, by the insertion of additional leaves or cards whenever desired, the whole of the information affecting one job or cost unit will be kept together, as there will be no carry-forwards to the different portions of the same records as in the case of bound books. All well-organised concerns thus employ most of the principal and subsidiary cost records on the Slip or Card System.

Q. 136. Enumerate the Subsidiary Records or Abstracts from which periodical entries are usually passed in the Principal Cost Records.

A. The following Subsidiary Records or Abstracts will usually be needed to enable periodical entries to be made in the Principal Cost Records:

(1) **Stores Issues Book or Abstract.**—To record the periodical issues of materials to the several Jobs or Cost Units.

(2) **Materials Returned Book or Abstract.**—To record the periodical return of materials from the Jobs or Departments to the Stores.

(3) **Materials Transfer Journal or Abstract.**—To record the transfer of materials from one Job to another periodically.

(4) **Direct Wages Analysis or Abstract.**—To record the periodical amount of Direct Wages attributable to each Job or Cost Account.

(5) **Direct Charges Analysis.**—For Direct Charges specifically incurred on certain Jobs and chargeable thereto.

(6) **Indirect Wages Analysis or Abstract.**—For indirect wages apportionable periodically to the different departments.

(7) **Indirect Materials Analysis or Abstracts.**—For indirect and consumable stores chargeable to the different departments periodically.

(8) **Oncost Summaries.**—For indicating the oncosts recovered from the several cost units.

(9) **Job and Stock Order Summaries.**—For record of the actual cost of each Job or Cost Order completed, with details as to constituent costs.

(10) **Work-in-Progress Summary.**—To record the Jobs in process of manufacture.

Q. 137. Give in the form of a tabulated statement the sources from which detailed particulars would be obtainable in regard to (a) Materials, (b) Labour, (c) Oncost, and (d) Production Statistics for the purpose of costing.

A. The detailed particulars obtainable and their sources of origin will be as under:

Information in regard to:	Sources of Origin	Nature of Information obtainable
Direct Materials ..	**Counting House**—Invoices, Credit Notes, etc. **Cost Office**—Goods Received Notes.	For cost and quantities of materials purchased directly for jobs, contracts or processes and those purchased for stores.
	Stores Dept.—Bin Cards, Material Issue Requisitions, Stores Returned Notes, Materials Issued Book.	For materials issued from stores to production and returns therefrom to stores.
	Operating Depts.—Materials Transfer Notes ..	For transfers of materials from one job to another.
	Cost Office—Materials Issued Abstracts or Analysis ..	For value of direct materials chargeable to each dept., job, process or other cost unit.
Direct Labour ..	**Time Office & Wages Office**—Clock Cards, Piece-Work & Job Cards, Wage Tickets & Time Sheets.	For time put in and work performed.
	Wages Sheets & Pay Roll. .	For net direct wages payable after deduction of fines, advances, rent, insurance, etc.
	Cost Office—Wages Abstract or Analysis	For direct wages chargeable to each dept., job, process or other cost unit.
Oncost ..	**Counting House**—Statements of Indirect Expenses distinguishing between Works, Office & Sales Expenses.	For Total Indirect Expense actually incurred and analysed into Works, Office and Sales Overheads.
	Cost Office—Allocation of Indirect Material, Labour and Expenses.	For Departmentalisation and Analysis of expenditure based on estimated figures and chargeable to each productive section.
Production Statistics ..	**Time Office**—Wage Records	For Departmental Analysis of number and class of workers employed with the respective labour hours and wage amounts.
	Operating Depts.—Output Records	For periodical Production and Progress Reports.
	Cost Office—Cost Records	For Cost of Output and Work-in-Progress subdivided into jobs, operations, processes, or departments as per requirements.

Q. 138. Draft Entries to be passed through the Cost Journal illustrating the principles of Double-Entry in respect of the following:

(1) (a) The Direct Materials consumed by the Jobs and specially purchased.
(b) The Direct Materials consumed by the Jobs issued from stores.
(2) Return of surplus materials from Jobs to Stores;
(3) Transfer of materials from one Job to another;
(4) The Direct Wages expended on the Jobs;
(5) The Direct Charges applicable to the Jobs;
(6) The Allocation of Works and Office Oncosts to each completed Job;
(7) The transfer of Finished Goods to Stock;
(8) Transfer of Finished Goods to Jobs;
(9) Credit to completed Jobs with their Sale Prices;
(10) For transferring profit on each completed Job;
(11) Sales from Finished Stock;
(12) Closing each incomplete Job Account;
(13) Provision of Works Oncost on Work-in-Progress;
(14) Provision of Office Oncost on Work-in-Progress;
(15) Bringing into record Closing Stock of Finished Goods;
(16) Transfer of Profit on Sales from Finished Goods.

A. The Journal entries will be as under:

(1) (*a*) For materials specifically purchased for a job:
Debit each Job Account concerned and credit Direct Materials Account.

(*b*) For materials issued from Stores to a Job:
Debit each Job Account concerned and credit material stores Account.

(2) For return of surplus materials from Job to stores:
Debit material stores Account and credit the Job Account concerned.

(3) For transfer of materials between Jobs:
Debit the receiving Job and credit the Job transferring.

(4) For Direct Wages on Jobs:
Debit each Job Account and credit Direct Wages Account.

(5) For direct charges applicable to the Jobs:
Debit each Job Account and credit Direct Charges Account.

(6) For Oncosts attributable to completed Jobs:
Debit each Completed Job Account and credit Works and Office Oncost Accounts respectively.

(7) For transfer from Jobs to Finished Goods Account:
Debit Finished Goods Account and credit Job Account.

(8) For transfer from Finished Goods to Jobs:
Debit the Job Account and credit Finished Goods Account.

(9) For crediting each completed Job Account with its sale price:
Debit Completed Jobs Account and credit each Job Account.

(10) For transferring Profit on each Completed Job:
Debit each Completed Job Account and credit Profit or Loss on Completed Jobs Account.

Note:—In case of Loss, the entry would be just the reverse.

(11) For Sales from Stock of Finished Goods:
Debit Sales from Stock Account and credit Finished Goods.

(12) For closing each Incomplete Job:
Debit Work-in-Progress Account and credit each Incomplete Job.

(13) For providing Works Oncost on Incomplete Jobs:
Debit Works Oncost Suspense Account and credit Works Oncost Account.

(14) For providing Office Oncost on Incomplete Jobs:
Debit Office Oncost Suspense Account and credit Office Oncost Account.

(15) For bringing into record Stock of Finished Goods:
Debit Stock of Finished Goods Account and credit Finished Goods Account.

(16) For transferring Profit on Sales from Finished Goods:
Debit Finished Goods Account and credit Profit or Loss on Stock Sales Account.

(In case of loss the entry would be just the reverse.)

Q. 139. State clearly what accounts you would expect to find left open in the General Cost Ledger after the entries in the preceding question have been passed, and on what side their individual balance would fall. State also what further entries would be needed to close all the accounts, if the Double-Entry of the General Cost Ledger is to be completed through the Manufacturing Account.

A. After the entries as shown in the preceding question have been passed, the following Accounts would still be left open, and they will show debit or credit balances as indicated below:

(1) Direct Materials Account (specifically purchased)	(Credit Balance)
(2) Material Stores Account (Direct Materials issued from stores)	(do. do.)
(3) Direct Wages Account	(do. do.)
(4) Direct or Chargeable Expenses Account	(do. do.)

(5)	Works Oncost Account	(Credit Balance)
(6)	Office Oncost Account	(do. do.)
(7)	Works Oncost Suspense Account	(Debit do.)
(8)	Office Oncost Suspense Account	(do. do.)
(9)	Work-in-Progress Account	(do. do.)
(10)	Stock of Finished Goods Account	(do. do.)
(11)	Completed Jobs Account	(do. do.)
(12)	Sales from Stock Account	(do. do.)
(13)	Profit or Loss on completed Jobs Account	(Credit or debit as the case may be)
(14)	Profit or Loss on Stock Sales Account	(Credit or debit as the case may be)

Items Nos. (7), (8), (9) and (10) represent assets, and the accounts concerned will be closed by balance. A Manufacturing Account would then be opened, and the balances on all the other accounts (debit or credit) will be transferred thereto through the Cost Journal, and this will help to close all those accounts. The Manufacturing Account will then be closed showing a credit balance, and the latter will agree with the debit balances on the four Asset Accounts Nos. (7), (8), (9) and (10) in the aggregate, thus helping to complete the Double-Entry of the General Cost Ledger.

Q. 140. Explain what purpose is served by opening Works and Office Oncost Suspense Accounts. Illustrate your answer by a specimen account relating to Works Oncost Adjustments.

A. The portion of Works and Office Oncosts applicable to the different jobs or cost units is always charged to their respective accounts only on completion of each job, order or other cost unit. At the end of each costing period, however, there will remain several incomplete jobs or orders, and it will be necessary to provide for the apportionment of the Works and Office Expenses attributable to such work-in-progress. This is brought about by crediting Works Oncost Account and Office Oncost Account respectively with the amount applicable to work-in-progress and debiting the Works Oncost Suspense and the Office Oncost Suspense Accounts respectively with the same. The entry will then have to be reversed at the commencement of the new period by the relative amounts being written back to the Works and Office Oncost Accounts. An alternative method would be to carry down as balances the relative amounts thus provided on the Works and Office Oncost Accounts themselves. When the total Oncost thus recovered from the completed Jobs as also from the work-in-progress is compared with the actual expenses as shown by the Financial Books for the same period, the result will be to indicate the under- or over-allocation of any such estimated oncosts for the period.

WORKS ONCOST ACCOUNT

1956		Rs.	1956		Rs.
Jan./ Dec.	To Cost Ledger Control A/c. (or manufacturing A/c.) for total Works Oncost ..	29,700	Jan./ Dec.	By Work-in-Progress A/c. Being Works Oncost Charged to completed Jobs ..	25,700
			Dec. 31	„ Works Oncost Suspense A/c. Being Works Oncost Attributable to Work-in-Progress ..	2,800
			Dec. 31	„ Cost Ledger Control A/c. or manufacturing A/c. Being transfer of under-allocation ..	1,200
	Rs.	29,700		Rs.	29,700
1957 Jan. 1	To Works Oncost Suspense Account ..	2,800			

WORKS ONCOST SUSPENSE ACCOUNT

1956		Rs.	1956		Rs.
Dec. 31	To Works Oncost A/c. ..	2,800	Dec. 31	By Balance C/d. ..	2,800
1957 Jan. 1	To Balance B/d. ..	2,800	1957 Jan. 1	By Works Oncost A/c. ..	2,800

Note :—Office Oncost and Office Oncost Suspense Accounts will also be dealt with in a similar manner.

Q. 141. Draft specimen Cost Journal Entries incorporating the periodical figures from the Financial Records into the Cost Books and the ascertainment of costs where Control Accounts are maintained. Explain also the nature of each such entry.

A. The necessary entries for the above purposes would be as under:

(1) Direct Materials Control Account Dr.
To Cost Ledger Control Account
(For direct materials purchased for stores during the period, as per Financial books.)

(2) Work-in-Progress Account Dr.
To Cost Ledger Control Account
(For Direct Materials purchased specifically for jobs or cost units as per the Financial Books.)

(3) Work-in-Progress Account Dr.
To Direct Materials Control Account
(For Direct Materials issued from stores to jobs or processes.)

(4) Indirect Materials Control Account Dr.
To Cost Ledger Control Account
(For Indirect Materials and Consumable stores purchased for store keeping during the period, as per the Financial Books.)

(5) Wages Control Account Dr.
To Cost Ledger Control Account
(For actual total wages for the period as ascertained from the Financial Books.)

(6) Work-in-Progress Account Dr.
To Wages Control Account
(For the Direct Wages allocated to work-in-progress as per Wage Cost Abstracts.)

(7) Direct Materials Control Account Dr.
To Work-in-Progress Account
(For Direct Materials returned to stores from works.)

(8) Factory Overhead Control Account Dr.
To Indirect Materials Control Account
(For Indirect Materials issued for non-productive services.)

(9) Factory Overhead Control Account Dr.
To Wages Control Account
(For Indirect Wages for non-productive services and general labour.)

(10) Factory Overhead Control Account Dr.
To Cost Ledger Control Account
(For other factory expenses as per the Financial Books.)

(11) Office Overhead Control Account Dr.
To Cost Ledger Control Account
(For actual Office Establishment Charges incurred during the period as per the Financial Books.)

(12) Work-in-Progress Account Dr.
To Factory Overhead Control Account
(For factory Oncost allocated to work-in-progress.)

(13) Work-in-Progress Account Dr.
To Office Overhead Control Account
(For allocation of Office Oncost to Work-in-Progress.)

(14) Finished Stock Control Account Dr.
To Work-in-Progress Account
(For completed products and Jobs passed to Finished Stock.)

(15) Factory Overhead Control Account Dr.
To Indirect Material Control Account
(For adjustment of shortage of stock of stores as per Stores-checking Reports.)

(16) Cost of Sales Account Dr.
To Finished Stock Control Account
(For issue of Finished Goods at cost against Sales Orders.)

(17) Stock of Finished Goods Account Dr.
To Finished Stock Control Account
(For the balance on the former transferred to the latter.)

(18) Sales Overhead Control Account Dr.
To Cost Ledger Control Account
(For the periodical Sales Expense as per the Financial Books.)

(19) Cost of Sales Account Dr.
To Sales Overhead Control Account
(For Sales and Distribution Expense allocated to Sales.)

(20) Overhead Expenses Adjustment Account Dr.
To Factory Overhead Control Account
(For adjustment of Factory Overhead under-recovered in Costs.)

(21) Office Overhead Control Account Dr.
Sales Overhead Control Account
To Overhead Expenses Adjustment Account
(For adjustment of Office and Sales Overheads over-charged in costs.)

(22) Profit and Loss Account Dr.
To Cost of Sales Account
(For transfer of balance on latter account to close it.)

(23) Cost Ledger Control Account Dr.
To Profit and Loss Account
(For sale price of the goods sold as per the Financial Books.)

(24) Profit and Loss Account Dr.
To Overhead Expense Adjustment Account
(For transfer of the net balance on the latter account.)

(25) Profit and Loss Account Dr.
To Cost Ledger Control Account
(For transfer of Net Profit to Cost Ledger Control Account.)

Q. 142. **Give Specimen Forms of:**

(a) Cost Journal; and

(b) Works Order Ledger of a small manufacturing concern.

A.

(*a*) COST JOURNAL

Date	Narrative	Folio	Works Order Ledger						General Cost Ledger					
			Dr.			Cr.			Dr.			Cr.		
			Rs.	as.	ps.	Rs.	as.	ps.	Rs.	as.	ps.	Rs.	as.	ps.

(*b*) WORKS ORDER LEDGER OF A SMALL MANUFACTURING CONCERN

W. O. Number.. **Date commenced**:..

Nature of the work.. **Date completed**..

Date	No. of man-hours	Machine		Wages			Material			Oncost			Folio	Cr.		
		No.	Hours	Rs.	as.	ps.	Rs.	as.	ps.	Rs.	as.	ps.		Rs.	as.	ps.

CHAPTER IX

COSTING FORMS AND ANALYTICAL ABSTRACTS

Q. 143. Give specimen rulings of the following:

(a) Weekly Time-Card or Clock-Card; and
(b) Weekly Job-Card or Job-Ticket for each worker.

A. (*a*) TIME CARD OR CLOCK CARD

Worker's Name Rate

Works No.. For Week ending

Day		In	Out	Ordinary	Overtime	Total Hours
Monday	A.M.					
	P.M.					
Tuesday	A.M.					
	P.M.					
Wednesday	A.M.					
	P.M.					
Thursday	A.M.					
	P.M.					
Friday	A.M.					
	P.M.					
Saturday	A.M.					
	P.M.					

(*b*) JOB CARD OR JOB TICKET

(For each Worker)

Worker's Name .... **Works Order No.**............ .. .. **Clock No.**. ....

Worker's No.......................... **Department** .... **Week ending**...............................

Day	Description of Work	Rate	Hours Chargeable	Amount			Timing		
				Rs.	as.	ps.	On	Off	
Monday									A.M.
									P.M.
Tuesday									A.M.
									P.M.
Wednesday									A.M.
									P.M.
Thursday									A.M.
									P.M.
Friday									A.M.
									P.M.
Saturday									A.M.
									P.M.
			Total Hours ..				Total Amount.		

Signature.. **Signature**...

Worker. **Foreman.**

Note :—The timings in the columns for On and Off may be punched on Departmental Clock Recorder by the Workers themselves, or may be entered by the foreman.

Q. 144. Give a specimen form of an Operation Card for individual worker.

A. OPERATION CARD

Worker's Name .... Date ....

Worker's No. .... Dept. ....

Works Order No.	Description of Work	Machines used		Hours worked			Rate	Amount		
		No.	Hours	Ordinary	Over-time	Idle time		Rs.	as.	ps.

Signature ....
Foreman.

Q. 145. Give rulings of a Piece-work Card giving fullest possible information as to nature of work done, time taken and wages earned.

A. PIECE-WORK CARD

Works Order No.	Workman's No.....	Time allowed	Dept. or Section No.

Rate Fixed	Date Commenced	Date Completed

Operations..	Viewed and passed by ....

Particulars of Time Taken				Works Expenses	Price			
Days	Hours	Over-time	Total	Machine Nos.		Rs.	a.	p.
				Machine Rates	Amount of Piece-work Price Time .. Bonus .. Total Wages ..			
				Hours Machines Worked .... Shop Rate				

Q. 146. Give specimen ruling of:

(a) Pay-Roll for Productive Workers; and

(b) Pay-Roll for Non-productive Workers.

A.

(*a*) PAY-ROLL (For Productive Workers)

Department No.............................

Week ending..

Worker's Name	Clock No.	Earnings for each day						Rate	No. of Hours	Ordinary time	Overtime	Bonus earnings	Gross Wage			Deductions					Net Amount payable		
		Monday	Tuesday	Wednes-day	Thursday	Friday	Saturday									Advances	Fines	Total					
													Rs.	as.	ps.			Rs.	as.	ps.	Rs.	as.	ps.

Note:—Where different grades of direct workers are employed in each Department, and where it is necessary to ascertain the direct labour costs for each type of labour, separate Pay-rolls may be found necessary for each such type.

Roll made by ....

Roll checked by ....

Wages made up by..

Wages checked by...

Paid by ....

In the presence of...

(*b*) PAY-ROLL (For Non-productive Labour)

Department No. .

Week ending .. . . -

Worker's Name	Work's No.	Earnings for each day						Rate	No. of Hours	Gross earnings	Deductions	Net Amount			Analytical columns for services rendered						
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday					Rs.	as.	ps.	Building Repairs	Plant Repairs	Tool Repairs	Shop Supervision	Sundry Shop Services	Other Analytical Column	Other Analytical Column

Note :—The analytical columns may be headed to suit the requirements of each business.

Roll made by

Roll checked by

Wages made up by

Wages checked by ..

Paid by . . ..

In the presence of . . ..

Q. 147. Give specimen Analysis Sheets for the
(a) Direct Materials Abstract; and
(b) Indirect Materials Abstract.

A.

(*a*) MATERIALS ABSTRACT (Direct Materials)

For the Week ending.......................................

Total	Reqn. No.	Works Order No.	Reqn. No.	Works Order No.	Reqn. No.	Works Order No.	Reqn. No.	Works Order No.	Reqn. No.	Stock Order No.	Summary		
		Rs. a. p.		Rs. a. p		Rs. a. p.		Rs. a. p.		Rs. a. p.	Works Order No.	Net Amount Rs. a. p.	Job Cost L.F.
Add Transfers	Rs. .. Trans. No.												
Less Transfers or Returns	Total Rs. .. Trans. No. Return No.												
Net Amount Rs. Chargeable	..												

Note:—In the above form, the credits are shown by way of deductions from the total debits. Where, however, the credits for Returns to Stores are numerous, a separate abstract will have to be made and the total of such returns relating to each works order number will be deducted from the total debit in one amount.

(*b*) INDIRECT MATERIAL ANALYSIS OR ABSTRACT

For the month of..

Date	Req. No.	Total	Revenue Expenditure												Capital Expenditure					
			Repairs and Maintenance			Power House	Supervision	Inspecting & Testing	Store-keeping	Material Handling	Oiling & Cleaning	Other Analytical column	Other Analytical column	Other Analytical column	Building	Plant	Tools	Fixtures	Other Equipment	Other Analytical column
			Building	Plant	Tools															
				1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Total Rs.																				

Q. 148. Give specimen forms of the following:
(a) Productive Labour Analysis; and
(b) Non-productive (Indirect) Labour Analysis or Abstract.

A.

(*a*) WAGES ABSTRACT OR ANALYSIS (Productive Labour)

For the Week ending . ...

Works Order No.........				Works Order No.........				Works Order No.........				Stock Order No.........				Stock Order No.........			
Trade	Worker's No.	Hours	Net Amount	Trade	Worker's No.	Hours	Net Amount	Trade	Worker's No.	Hours	Net Amount	Trade	Worker's No.	Hours	Net Amount	Trade	Worker's No.	Hours	Net Amount

Note:—As a result of the above abstract, the direct labour attributable to each Works Order Number or Stock Order No. for the week would be ascertained.

SUMMARY

Works Order No.	Trade	Hours	Amount			Job Cost Led. Fl.
			Rs.	a	p.	

(*b*) INDIRECT WAGES ANALYSIS OR ABSTRACT

(For Non-productive Labour)

For the month of.......................................

Worker's No.	Rate	No. of Hours	Gross Earnings	Deductions	Net Amount	Revenue Expenditure												Capital Expenditure						
						Repairs and Maintenance			Power House	Supervision	Inspecting & Testing	Store-keeping	Material handling	Oiling & Cleaning	General Labour	Other Analytical column	Other Analytical column	Building	Plant	Tools	Fixtures	Other Equipment	Other Analytical column	Other Analytical column
						Building	Plant	Tools																
					Rs. as. ps.		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
				Total																				

Q. 149. Give rulings of a Plant Register as would present full information in regard to the original cost of each machine, its book value and repairs maintenance charges from year to year.

A.

PLANT REGISTER

Machine No. ....
Date of Purchase ....
Normal Depreciation ....
Description ....
Cost Price ....
Remarks ....
Maker ....
Location ....

Year	Depreciation charged	Book Value	Year	Depreciation charged	Book Value	Year	Depreciation charged	Book Value

REPAIRS AND RENEWALS

Date	Particulars	Reference	Amount			Remarks
			Rs.	As.	Ps.	

A separate account or card would thus serve to record the history of each machine and furnish vital information to those in management.

Q. 150. Give specimen Form of a Comparative Cost Card.

A. COMPARATIVE COST CARD OF FINISHED COMPONENTS

Name of Article or component .... Symbol or Code No...............................

Works or Stock Order No.	Date Started	Date Finished	Drawing or Specification No.	Quantity Ordered	Quantity Manufactured	Cost per each Article									
						Direct Materials	Direct Labour	Direct Charges	Prime Cost	Factory Oncost	Factory Cost	General Oncost	Total Cost		
													Rs.	As.	Ps.

Q. 151. Give rulings of Stock-checking Report showing results of actual count of stock of stores as compared with Bin Cards and Stores Card Records.

A.

STOCK-CHECKING REPORT

Date........ 19 Section

Location	Description	Actual Quantity in Stock	As shown by Bin Card		As shown by Stores Ledger		Differences		Explanations as to how differences cleared up
			No	Balance	Folio	Balance	Excess	Deficiency	

	Signature of Store-keeper	Signature of Stores Accountant	Report by .... Internal Auditor

Q. 152. Give the Form of Transfer of Finished Goods to Stock.

A.

TRANSFER OF FINISHED GOODS TO STOCK

To Stock-keeper from Dept. W. O. No............

Please receive the undermentioned material for stock.

Signature ....
Foreman.

Symbol or No.	Description of Product	Quantity	Cost				Posting Reference
			Rate	Value			
				Rs.	as.	ps.	

Received the above

Signature..
Stock-keeper.

Bin Card

No. ....

Q. 153. Draft the Form of a Works Order as would indicate full instructions as to the nature of the job and the materials, machines and tools required.

A.

WORKS ORDER

Order No. .... Office Reference	Date handed over to works	Date fixed for Delivery	Design. No.

Operations .... Machines to be used ....

....

Special Instructions .... Tools to be used ....

....

Quantity of Material requisitioned	Class of Material requisitioned

Date commenced ....

Date completed ....

Inspection Report ....

Order issued by ....

Finally tested by ....

Date of advice of office ....

Note :—Where there is no Planning Section, all Works Orders are issued by the Works Manager.

Q. 154. Give specimen rulings of (a) Contract Ledger, and (b) Direct Wage Abstract of a Building Contractor.

A.

(*a*) CONTRACT LEDGER

Contract No.............................. Site.. Date commenced.................. Certificates Received Date................

Contract Price .... Basis of Instalments........... Date completed......................... Date.............. Date.............. Date.............

Date	Particulars	Ref.	Debits						Credit			Net Cost
			Materials from Stores	Direct Purchases	Wages	Special Plant	General Oncost	Total	Materials returned	Plant returned	Total	

(*b*) WAGES ABSTRACT (BUILDING CONTRACTORS)

For the month of...

Class of Labour	Total	Contract No. 1	Contract No. 2	Contract No. 3	Contract No. 4	Contract No. 5
Bricklayers ..						
Stone-masons ..						
Joiners ..						
Plumbers ..						
Machinists ..						
Flooring ..						
Painters ..						
General Labour ..						
Rs.						

Q. 155. Give specimen rulings of a Cost Sheet.

A.

COST SHEET

Works Order No. Part No. or Symbol Date Order Received

Description Date Completed

Date Delivered..............................

Nature of Operations	Time Taken		Wages			Machine Rate per hour	Machine Charges			Hourly Oncost Burden	Oncost Charges			Total			Remarks
	Hrs.	Min.	Rs.	A.	P.		Rs.	A.	P.		Rs.	A	P.	Rs.	A.	P.	

Materials

Number Completed Total Cost Rs.

Cost per each

CHAPTER X

COST RECONCILIATION WITH FINANCIAL RECORDS

Q. 156. State how the accounts of the expenses should be kept in the Financial Records in order to facilitate Cost Analysis and serve as a check on the figures employed for costing purposes.

A. In order to ensure that the whole of the Administrative, Management and Works Expenses have been properly recovered from costs, and also with a view to enable a careful comparison to be made and a rigid control to be maintained over such expenses, it is highly essential that the accounts of all these items of expenditure should be arranged and classified by the Accounts Department in a manner as would facilitate the work of the Cost Office.

The Financial Records should be maintained in close consultation and co-operation with the Cost Office, so that the monthly summary of expenses as obtained therefrom may be compared with the analytical summary of cost recovery for the same period, to serve the following purposes:

(1) To enable a comparison to be made of the actual current expenses with the scheduled figures as laid down in advance for costing purposes;

(2) To enable a comparison of each item of expense with the corresponding figure for the preceding month; and

(3) To secure a means for close control over the charges incurred by the different departments, as would be evidenced from a further detailed allocation amongst the departments responsible therefor.

It needs to be understood, however, that such comparisons would, of course, be with due regard to any increase or decrease in output for each period respectively.

Q. 157. Explain why it is necessary and desirable to maintain Cost Books under the Double-Entry System.

A. In order to ensure the arithmetical accuracy of the Cost Records, it is essential that they be maintained on Double-Entry principles. This would enable proper books of accounts and a complete systematic record to be kept of the progress of the several jobs on hand as also their costs in all their elemental components. Besides, maintenance of the Double-Entry Cost Books would considerably facilitate the agreement of the Cost Records with the Financial Books, and would help locate the discrepancies and the weak spots in the system of costing. The use of Double-Entry would necessitate the keeping of the books of original entries relating to costs, and, under the circumstance, no entry would be made directly in the Job Cost Ledger or General Cost Ledger unless a definite record thereof is passed through the Cost Journal with full narration. The Cost Journal would thus prove to be a permanent record of the original data of all the entries which appear either in the Job Cost Ledger or the General Cost Ledger.

There would be no objection to separate Cost Journals being used in respect of charging of Direct Materials, Direct Labour, Works Oncost and General Establishment Oncost in order to enable several clerks to be engaged in the writing up of the original entries regarding Cost Allocation and Recovery, with a view to obtaining of prompt cost information. Double-Entry Cost Books would thus serve to indicate by comparison that the whole of the expenditure as recorded in the Financial Books is absorbed in the Cost Accounts, and will reveal any discrepancies or balances of amounts not so recovered or over-charged.

Q. 158. Explain how you would reconcile the periodical totals of the Direct Materials charged out to the Jobs or Processes and the Indirect Materials forming part of the Works Overhead with the relative items shown as consumed by the Financial Records.

A. The issues of direct materials to the different jobs, departments or processes would be analysed from the Stores Issue Requisitions and debited by the Costing Department to the accounts of the jobs, departments or processes concerned, weekly or monthly, as the case may be. Similarly, the direct materials and stores returned, if any, would be analysed from the Stores Returned Notes and credited weekly or monthly to the accounts of the various jobs or departments concerned from the Returned Stores Analysis Sheets or Book, by the Costing Department. The transfer of materials from one job to another would be analysed through Materials Transfer Abstract, and the accounts of the jobs receiving would be debited and those transferring would be credited with the relative values. The total of these Direct Material Issue Abstracts or Analysis *less* the total of the Stores Returned Notes would serve to indicate the total value of direct material consumed and charged to the Cost Accounts during any particular period.

The issues of Indirect Material and Stores would be evidenced by Requisition Notes of quite a different colour so as to obviate any chance of these being mixed up or taken for Direct Material Issue Requisitions. These would also be analysed weekly or monthly and would be included in the Works Oncost through the Indirect Materials Abstract.

In order to facilitate comparison with the record of similar items in the financial books, two separate accounts must be maintained in the General Ledger—one for Direct Material and another for Indirect Material. All purchases of productive material would be debited to the Direct Materials Account and those of Indirect Material to the latter account. Both these accounts would be credited with returns to suppliers, if any. No entries would be made in the financial books in regard to the issues thereout. At balancing time, the stock on hand of Direct and Indirect Materials would be separately taken and valued at cost. If from the total purchases of the period *plus* the Opening Balance, if any, the closing stock is deducted, the balance would represent the value of materials consumed of each different type during the period. These figures should necessarily tally with the corresponding totals of all the Direct Material and Indirect Material Abstracts for the period as made out by the Costing Department from the Material Issue Requisitions. In actual practice, however, there will always be a small difference on account of leakages, breakages or wrong issues, but this should not exceed a certain small percentage. In this manner, a most useful and necessary check will be maintained on the direct and indirect materials dealt with.

Q. 159. Describe clearly how the Productive Wages charged out to the Jobs or Departments for any particular period and the Non-productive Wages on Auxiliary Services included in the Works Overhead would be reconciled with the corresponding figures for the same period as shown by the Financial Records.

A. The Direct or Productive Wages would be independently analysed by the Costing Department, weekly or monthly, from the Job Tickets and Piece-Work Cards, or Productive Wages Abstracts as made out by the foreman of each Department, and from the analysis thus made, the account of each Department, Job, Process or Stock Order will be given its respective debit in the Job Cost Ledger. The total of the Productive Wages Analysis for each week or month as compiled by the Costing Department and charged out to the Cost Accounts must necessarily tally with the total of the Productive Wages for the same period as ascertained from the Financial Books, as both these departments collect their necessary data from the same original records, viz., the Time Cards, Job Cards, Piece-work Cards or the foremen's Abstracts of Wages.

Similarly, an abstract will be made out of Indirect Labour for the same period by the Costing Department and agreed with the total Indirect Labour incurred as shown by the Financial Books. The analysis of direct labour as made by the Costing Department will be with a view to ascertain how much of it is chargeable individually to the products worked during the period. The analysis of the indirect labour will be with a view to find out what wages were incurred in running the different services subsidiary to the main function of production, so that they may be included in the Works Oncost under their legitimate heads. Here, again, to serve the important purpose

[*Contd. on p. 158*

Q. 160. Give a Form of the Manufacturing, Trading and Profit and Loss Account to be compiled from the Financial Records of a given period as would enable an intelligent and reliable comparison to be drawn of the Prime Cost, Works and Office Costs, and Total Cost as shown by the Cost Records for the corresponding period.

A. MANUFACTURING, TRADING AND PROFIT AND LOSS ACCOUNT

(Compiled from Financial Records)

		Rs. a. p.
DIRECT CHARGES:		
Raw Materials, Stock, 1st January	... .	
Purchases	... ...	
Carriage Inwards	... ...	
Less: Stock, 31st December	... ...	
Materials consumed	... ...	
Direct Wages	... ...	
Direct or Chargeable Expenses	... .	
	Prime Cost =	
WORKS EXPENSES:		
Works Salaries	... ...	
Indirect Materials	... ...	
Indirect Wages	... ...	
Factory Rent and Taxes	... .	
Motive Power	... ...	
Factory Lighting and Heating	... .	
Works Repairs	... ...	
Factory Insurance	... ...	
Loose Tools	... ...	
Works Stationery	... ...	
Plant and Works Depreciation	... ...	
Oiling and Cleaning	... ...	
Gas and Water	... ...	
Workmen's Compensation	... ...	
Administration Expenses—Proportion	... ...	
	Factory or Works Cost =	
ADMINISTRATION OR OFFICE EXPENSES:		
Office Salaries and Wages	... ...	
Office Rent and Taxes	... ...	
Printing and Stationery	... ...	
Office Repairs	... ...	
Office Lighting and Insurance	... ...	
Postages and Telegrams	... ...	
Telephone Charges	... ...	
Directors' Fees	... ...	
Legal Expenses	... ...	
Audit Fees	... ...	
	Cost of Production =	
SELLING AND DISTRIBUTION EXPENSES:		
Advertising	... ...	
Printing and Stationery	... ...	
Travellers' Salaries	... ...	
Travellers' Commission	... ...	
Showroom Expenses	... ...	
Bad Debts	... ...	
Postage and Sundries	... ...	
Carriage and Freight Outwards	... ...	
Running Expenses—Delivery Vans	... ...	
Depreciation—Delivery Vans	... ...	
Insurance	... ...	
Directors' Fees—Portion	... ...	
	Total Cost or Selling Cost =	
Add: Net Profit	... ...	
	Total Sales = Rs.	

Contd. from p. 156]

of reconciliation of the cost figures with their corresponding items in the Financial Books, the total amount of wages for the week or the month debited to Wages Account in the first instance will have to be subsequently analysed. The analysis, in this case, will be with a view to ascertain the wages payable under each of the following heads:

(1) Direct or Productive Wages.
(2) Wages for erection or extension of Buildings. } to be capitalised
(3) Wages for erection or extension of Plant. } to be capitalised
(4) Wages for manufacture of Tools. } to be capitalised
(5) Labour in respect of repairs to Buildings.
(6) Labour in respect of repairs to Plant.
(7) Labour in respect of repairs to Tools.
(8) Sundry Indirect Labour in respect of different services rendered.

The analysis will then be journalised, debiting each of the above accounts with their respective amounts and crediting Wages Account.

Q. 161. What are Cost Control Accounts? Describe clearly how the method of maintaining Cost Books, where a Manufacturing Account is used to complete the Double-Entry, differs from the system utilising Cost Control Accounts as a medium of completing the Cost Records.

A. The system of opening of Control Accounts in the General Cost Ledger is a method employed by a large majority of concerns whereby all the varied types of expenses as appearing in the Financial Books are incorporated in the Cost Books on Double-entry principles. As a result of all such figures having thus been brought into the Cost Books, Cost Control Accounts provide not only an easier and more accurate basis for reconciliation with the financial figures, but serve as a proof that the whole of the actual expenditure for any said period has been duly recovered in costs. If there is any under-charge or over-charge of any of the items, the same would immediately be revealed by way of balances on the relative Control Accounts.

Where this method is used, the Manufacturing Account will have to be dispensed with, and the General Cost Ledger Control Account will take its place. Separate Control Accounts will also have to be opened for Direct Material, Direct Wages, Indirect Stores, Factory Overhead, Administrative Overhead, Sales Expense and Finished Stock. The General Cost Ledger Control Account will be the principal Control Account, whereas the others may be looked upon as subsidiary Control Accounts.

Each of these subsidiary Control Accounts will be periodically debited with its respective figures as obtained from the Financial Books, and the corresponding credits will be given to the General Cost Ledger Control Account. This will help incorporating the financial figures periodically in the Cost Records. Each subsidiary Control Account will thus help indicate how far the amount actually expended under the heading it represents has been recovered in costs, and whether there has been any under- or over-charge in respect thereof. The General Cost Ledger Control Account is used only to complete the Double-Entry.

Where the Manufacturing Account is introduced to fulfil the Double-Entry of the Cost Records, only the periodical figures of material, labour and oncosts chargeable and allocated to the cost units, as ascertained from the Cost Abstracts or Analyses are passed through the Cost Journal, and whether the whole of the expenditure actually incurred during the same period has been charged in the costs or not can be ascertained only on comparison of the cost figures with those in the Financial Books. The profits as shown by the Cost Books will also be capable of comparison only with the profit as indicated by the Profit and Loss Account, and the causes for any difference between these two will have to be traced from the Financial Books. Cost Control Accounts, on the other hand, will help towards the assimilation of the financial figures in the Cost Books and their final reconciliation with the cost figures on more definite and reliable basis.

Q. 162. Explain briefly the purposes served by the following Control Accounts:

(a) Wages Control Account;
(b) Direct Materials Control Account;
(c) Indirect Materials Control Account;
(d) Factory Overhead Control Account;
(e) Office Overhead Control Account;
(f) Work-in-Progress Account; and
(g) Cost Ledger Control Account.

A. (*a*) **Wages Control Account.**—The object of this Account is to bring into record the periodical total amount of wages as appearing in the financial records, and then to transfer to Work-in-Progress Account the amount relating to Productive Wages, and to Factory Overhead Control Account, the amount attributable to Works Overhead. Any over- or under-charge in costs would thus be brought to light.

(*b*) & (*c*) **Direct and Indirect Materials Control Accounts.**—The purpose of these Accounts is to incorporate the purchases of the items in the Financial Books, and also to bring into record how much of the Direct Materials have been charged to Work-in-Progress, and to what extent the Indirect Materials have been allocated to Factory and Office Overheads. The closing balances shown on these Accounts will be compared with the actual stock from the lists obtained from either the Bin Cards or the Stores Record Cards, and the discrepancies, if any, would be adjusted. A good check would thus be secured on the closing stocks of Direct and Indirect Materials, and the fact whether the total amounts shown as consumed by the Financial Records have been allocated to costs will be elicited.

(*d*) & (*e*) **Factory and Office Overhead Control Accounts.**—These Accounts are maintained with a view to secure a similar check on the Works and Office Oncosts as obtained from the Financial Books on comparison with what amounts have been incorporated in the Costs for the same period. Any over- or under-recovery in respect of these would be detected, and the necessary adjustments would be made in the rates for future Costs.

(*f*) **Work-in-Progress Account.**—This Account contains on the debit side the opening balance of the work in process of manufacture, and the further amounts expended on Direct Materials, Direct Wages, and Factory and Administration Overheads during each period. On the credit side will appear the materials returned and the cost of work completed during the period. The closing balance will represent the value of incomplete work, which will be carried forward.

(*g*) **Cost Ledger Control Account.**—This Account is opened to complete the Double-Entry in regard to the incorporation of the figures from the Financial Books.

Q. 163. Where the Cost Books are not maintained under Double-Entry, what steps should be taken to ensure the correctness of the Stores Records ?

A. Even where the whole of the Cost Accounts are not maintained under Double-Entry, a practice usually obtains of opening a Stores Ledger Control Account in the General Cost Ledger, so as to secure a rigid control on all the movements of Stores. Such a step serves not only as a check on the accuracy of the postings in the Stores Ledger, but helps also to readily ascertain the total value of materials in hand on any date without actual stock-taking and without undergoing the trouble of balancing a large number of stores accounts. With this end in view, an account styled " Stores Ledger Control Account " is opened in the General Cost Ledger, and a " General Cost Ledger Adjustment Account " in the Stores Ledger. To these accounts are posted in periodical totals all the items that have already been posted in detail to the individual accounts in the Stores Ledger. To render the Stores Ledger self-balancing so that the clerk in charge thereof may be held responsible for its complete agreement, all the transactions that have been entered individually to the numerous accounts in this Ledger will be posted, in periodical totals, on the reverse side of the General Cost Ledger Adjustment Account opened at the end of the same Stores Ledger. The corresponding debits or credits in respect of the same entries will be posted to the Stores Ledger Control Account opened in the General Cost Ledger. This latter account will then represent a Total Account of the transactions in Stores for a particular period so as to serve as a control and check on the Stores Ledger.

When the postings of all the transactions in Stores for a particular period are made, the balances as shown by the General Cost Ledger Adjustment Account and the Stores Ledger Control Account respectively will be identical. There will, however, be this difference, that whereas the Stores Ledger Control Account will indicate a debit balance, the General Cost Ledger Adjustment Account will show a credit balance of a similar amount. If a list is made of all the debit balances (in values) of the individual Store Accounts in the Stores Ledger on any particular date, the total thereof must agree with the credit balance at the same date as shown by the General Cost Ledger Adjustment Account appearing in the same Ledger. There will, of course, be a small percentage of difference normally arising from distribution of small quantities from the bulk, but any abnormal difference must be inquired into and the causes thereof must be ascertained, and no unusual discrepancies should be accepted without investigation.

Q. 164. What is a Profit and Loss Reconciliation Statement ? Give the main reasons which cause a difference between the profits as disclosed by the Cost Books and those as reflected by the Financial Books for the same period.

A. On completion of the writing up of Cost Records under the Double-Entry System, the next step would be to reconcile the results as shown by the Cost Books with the profits as disclosed by the Financial Books. This is usually brought about by the compilation of a Profit and Loss Reconciliation Statement. As a rule, there are bound to be some differences between the two results, and, if they do agree without a reconciliation statement it would be a mere coincidence, for there are several reasons which always cause a disagreement between the results as disclosed by the two different sets of books. In any case, the reconciliation of these is considerably facilitated when both the sets of records are maintained under the Double-Entry.

In order to effect the necessary reconciliation, the following items would need to be scrutinised and adjusted:

(1) The Works, Office and Sales Overheads recorded in the Financial Books would represent the actual expenditure during the period, whereas the Works, Office and Sales Oncosts absorbed in the Cost Records during the same period would be represented by an estimated approximation of what such expenditure would be as predetermined on the basis of the corresponding expenditure in a similar previous period with necessary adjustments as current conditions would call for. This must result in a difference between these figures;

(2) The Stock of Stores on hand at the end of each period, as ascertained on an inventory of valuation, may show some difference in value and quantity, and this must also cause a disagreement in the values and quantities as shown by both the sets of accounts. The reasons which account for such difference would arise due to a difference in the pricing of Stores Issue Requisitions and the closing stock of stores. Besides, discrepancies might arise from wastage, shrinkage or evaporation resulting from small quantities having been taken from time to time from the bulk;

(3) Similar differences may arise due to different bases of valuation of stocks and issues of raw materials;

(4) Costing Records are not concerned with items like Preliminary Expenses, Brokerage on Shares, Goodwill written off, Dividends and Interests received on Investments, etc. whereas these are included in the Financial Accounts;

(5) If interest on capital and loans is not considered as an element of cost, but is brought into record in the financial books, this might also cause a difference;

(6) Rent of own premises may have been included in the Cost Accounts, but not in the Financial Accounts;

(7) Profit or Loss on sale of Fixed Assets may appear in the Financial Books, but not in the Cost Records;

(8) Exceptional losses due to removal of business, overhauling of entire plant, obsolescence of machinery would not be brought into Costs although they might appear in the Financial Accounts;

(9) Excessive provisions for depreciation, doubtful debts, discounts, etc., in the financial books may be yet another reason for causing a disagreement; and

(10) Different methods of depreciation on Fixed Assets would have been used in Cost and Financial Records.

Note.—It needs to be pointed out that, as a rule, there will be no difference arising in respect of Direct Materials and Direct Labour consumed as these are constantly checked with the financial records, and are fully and promptly recovered in Costs from period to period.

Q. 165. Give a specimen Profit and Loss Reconciliation Statement showing how the profits as shown by the Cost and Financial Accounts respectively are reconciled.

SPECIMEN

Profit and Loss (Reconciliation) Statement

(Showing agreement of Cost Results with those as per Financial Books)

	Rs.		Rs.
To Office Oncosts under-recovered ..	..	By Net Profit (as per General Cost Ledger) ..	..
,, Sales Oncost under-recovered ..	..	,, Works Oncost recovered in excess	..
,, Loss due to obsolescence of machinery ..	..	,, Depreciation overcharged in costs	..
,, Loss from depreciation in stock values ..	..	,, Bank Interest ..	..
,, Brokerage on shares written off ..	..	,, Interest & Dividends on Investments ..	..
,, Preliminary Expenses, written off..	..	,, Stores Adjustments ..	..
,, Net Profit as shown by Financial Accounts ..	..	,, Profit on sale of old Fixtures ..	..
Rs.	..	Rs.	..

Q. 166. Under what circumstances would the actual profits fall short of those as shown by the Cost Accounts ?

A. Any of the following reasons may account for the Financial Accounts disclosing less profits than as shown by the Cost Accounts:

(1) The actual expenses incurred as recorded in the financial books may be far in excess of the Works and Office Overheads as recorded in Costs;

(2) Different bases may have been adopted in the valuation of stocks of materials and stores. Where market price, if lower than the cost, may have been adopted in the Financial Accounts for the purposes of Cost Accounts, such market fluctuations would be ignored, and stocks would be valued at actual cost;

(3) Abnormal or capital losses such as expenses on removal of business, loss on sale of investments or fixed assets, goodwill written off, debenture discounts, charitable donations, loss arising from obsolescence of machinery, income-tax, damages payable at law, etc., may have appeared in the Financial Accounts, but would be ignored for the purposes of Costs;

(4) Depreciation on buildings, plant and implements may have been charged in the Financial Accounts at higher rates than in the Cost Accounts;

(5) Abnormal wastage of materials, idle time, etc., may have been ignored for costing purposes, whereas they appear as items of losses in the Financial Accounts; and

(6) Work-in-Progress would be valued in Cost Accounts, inclusive of its share of Works and Office Overheads, whereas a more conser-

vative basis of valuation may have been adopted in the Financial Accounts, and Work-in-Progress may have been taken at Prime Cost or Works Cost.

All such differences can easily be traced and the profits as shown by the two sets of accounts can be reconciled, if both these are maintained on Double-Entry principles. Besides, in order that the whole of the expenditure actually incurred by the business may be recovered in costs, it is highly essential to review the Works Oncost and Office Oncost Rates charged in Costs at frequent intervals in the light of the actual facts.

Q. 167. On balancing the Cost and Financial Books, it is ascertained that the Office Overhead recovered in costs on the basis of the previous year's accounts is much less than the total Establishment Charges as shown by the Financial Records. State what reasons you think would account for such difference.

A. Any one or more of the following reasons may account for the difference:

(*a*) Without any corresponding decrease in the Establishment Expenses, the output for the current financial period may have been less than that of the preceding one;

(*b*) The Office Expenses might have increased, and yet the output may have remained constant;

(*c*) Some unusual expense of a non-recurring nature may have been incurred in the period under review;

(*d*) The percentage of oncost based on the accounts of the previous period may not have been correctly arrived at;

(*e*) The figures of the preceding period may not have been sufficiently representative to form a reliable basis for future use; and

(*f*) No provision might have been made in the Cost Accounts for Office Oncost on Work-in-Progress.

Q. 168. How would you guard against serious discrepancies between Cost and Financial Accounts arising from fluctuations in Output?

A. There is hardly ever any discrepancy between the Direct Material, Direct Labour and Direct Charges allocated to costs and as shown by the financial books, as these can be easily identified with the jobs or processes on account of which they were expended and are accordingly charged. Serious discrepancies would, however, often arise in respect of Works Overhead and Office Oncost where there are fluctuations in output. The reason is that whereas the Financial Books record the amount actually expended under each head from time to time, these overheads are always assimilated in Costs on the basis of approximation predetermined on the assumption of normal output. These are then recovered by way of a percentage on the prime cost, direct labour, direct material, or direct labour hours of each job or process as may be deemed expedient, and a difference is bound to arise where the output for any period has fluctuated. In case where the turnover is higher than the estimated normal output, the overhead charges allocated to the cost units would necessarily be more than the amount actually expended during the same period. Where the turnover is less than the normal, a reverse situation will arise, and the overheads appearing from the financial records would be more than the total overheads recovered from Costs.

In order to minimise such differences from time to time, it is highly essential that the relation of overhead percentages chargeable to the cost units should be carefully scrutinised and reviewed, and the revised rates should be applied to the future costs with due regard to the increase or decrease in the output.

CHAPTER XI

MISCELLANEOUS COSTING QUESTIONS

Q. 169. What precise service do Cost Accounts render in respect of: (a) Estimating and Tendering; (b) Buying and Selling; (c) Periodical comparisons; (d) Materials; (e) Departmentalisation; (f) Management; and (g) Work-in-Progress?

A. (*a*) Proper **Estimating and Tendering** is one of the benefits resulting from keeping a good system of Cost Accounts. As more reliable data are available, estimates and tenders can be made with greater confidence and lesser chances of error on either side. A wrong estimate or tender will involve the concern in a loss, where there has been under-estimation and the contract is given to be worked, or where there has been an over-estimation, it might result in the loss of contract itself. Estimates and tenders can be revised with a greater degree of accuracy, when the same are required to be very conservative.

(*b*) **Buying and Selling.**—Cost Accounts enable one to judge whether the buying has proved to be judicious or otherwise, and they also put a stop to overstocking of a particular class of materials. Guided by the production orders, it will enable the factory to buy materials in larger or smaller quantities and perhaps at more favourable rates, especially if the trend of current market prices of materials is properly studied.

As the cost of production is correctly calculated, due to a proper system of Cost Accounts, the selling price can be fixed with greater accuracy. Over-production can be avoided and production of articles not in demand can be stopped at once.

(*c*) **Periodical Comparisons.**—As a result of more detailed information available in Cost Accounts, comparisons are made more effective. Production units, quantities of stores consumed, cost of idle time, etc., may be tabulated and compared, and departmental results may also be subjected to comparison. This is a benefit which is additional to the one derived by comparison of various figures in the financial set of books.

(*d*) **Materials.**—A system of Costing will surely include a good system of records, which will enable the manufacturer to have a sound control over receipts and issues of materials, and the consequent stoppage of loss by theft, pilferage, etc. Over-stocking of a particular kind of material will be done away with by fixing maximum and minimum quantities to be carried, and more accurate information regarding the fixing of prices of stores issued to jobs and contracts will be available. If necessary, purchases can be made in advance to answer future requirements, or they may be entirely stopped when overstocked.

(*e*) **Departmentalisation.**—Instead of having the results of the factory working as a whole, departmental results can be obtained which will throw more light on the figures available, and which will enable the proprietor to see at a glance which of the departments are working unsatisfactorily or at a loss. This might demand varying methods of oncost applicable to different departments according to the conditions ruling therein.

(*f*) **Management.**—As a good costing system goes to reveal many flaws in the working of a factory, the Management will have at their command such valuable information as will guide them in controlling production, in avoiding loss of time, in properly fixing the dates of the delivery or completion of contracts, in the proper division of work and in taking such action as may put a stop to defects disclosed.

(*g*) **The valuation of Work-in-Progress,** without a good system of Cost Accounts, is very difficult. If Cost Accounts are kept on Double-Entry System, it will not be a difficult matter to prepare a Total Work-in-Progress Account from the Uncompleted Jobs or Contract Accounts. In the absence of proper figures, this item can be only estimated and the results will, naturally, be less reliable.

Q. 170. Mention fully the advantages to a Building Contractor of keeping proper Cost Accounts.

A. The advantages of Cost Accounts to a Building Contractor may be summarised as under:

(1) The contractor would be able to secure better control over purchases of materials and stores and maintain the necessary stocks;

(2) Proper Costs would reveal to him all losses from pilfering of materials or waste of materials or labour;

(3) They would disclose to him the existing defects in the Wage System, and would help him fix up piece-rates for different types of work with greater accuracy;

(4) They prevent him from under-quoting or over-estimating, and thus save him from loss arising from either circumstance;

(5) They will provide most valuable data for following the trend of the business more accurately and intelligently, and stimulate the introduction of better organisation as would lead to greater efficiency;

(6) They will enable him to control and keep within determined limits all overheads by presenting him easy and reliable means of comparison of expenses under each separate head from period to period;

(7) They would help him find out what types of contracts are most profitable;

(8) They will present before him reliable information as to how each completed contract has resulted, whether in profit or loss, and point out the several components of costs;

(9) They will furnish him with a reliable method of evaluating partly completed contracts and guide him as to the most desirable method of taking credit for profit on work-in-progress; and

(10) They help him decide how to utilise his financial resources to best advantage.

All these advantages will, however, accrue provided a most suitable system of costs is installed, and that all the cost information is promptly and accurately recorded. It will equally be necessary to ensure that the whole of the costing data and analytical information are properly filed and intelligently utilised on appropriate occasions.

Q. 171. Explain what you understand by the "Cost-plus" method of placing Contracts.

A. The method of placing contracts under "Cost-plus" arrangement is being chiefly used by the Government Departments of Industrial Supplies in times of war or of accelerated defence plans when production has to be achieved with greatest economy of time and money. The method consists in an arrangement whereby the contractee arranges to pay the contractor or the manufacturer the actual cost price of the job or production order plus an agreed additional percentage thereof to cover profit.

The method proves to be of considerable advantage to both the parties concerned, specially in cases where the cost of materials, wages and overheads are subject to considerable fluctuations, and it is not possible under the circumstance, to arrive at a standard or predetermined basis of costs.

As there is no incentive to economy in production costs so far as the contractor is concerned under such an arrangement, it is usually agreed that an effective control should be maintained by the Government to serve as a check upon waste, inefficiency or excessive overheads by a system of rigid periodical supervision by their representatives to ensure that the costs of materials, wages and works and management oncosts are within prescribed limits after making due allowance for the abnormal conditions of work and supplies as then existing. Such supervision becomes inevitable as the percentage of profits is based on the total costs, and the contractor will not be influenced to secure economy in costs, since higher the costs, the bigger would be his profits.

Q. 172. How would you deal with the following calculations of costs of production of given articles, and where would you include the total figures, for (a), (b) and (c) in your Trading Account Statements:

(a) Freight and cartage inwards;

(b) Freight and cartage outwards; and

(c) Discounts received on purchases, and discounts allowed on sales?

A. (*a*) **Freight and Cartage Inwards.**—This goes to add to the cost of materials purchased, and the expense will be taken into consideration while fixing the prices at which stores are charged out to various jobs, contracts, etc. This, however, forms part of the Prime Cost. In the financial statements this item will appear on the debit of the Trading Account.

(*b*) **Freight and Cartage Outwards.**—This is an expense incurred on distribution of goods, and will form one of the items of administrative expenses which are distributed by way of Office Oncost. Where Selling Oncost is shown separately, this item will be included in the Selling Oncost.

(*c*) **Discounts received on purchases, and discounts allowed on sales.**—These are cash discounts both ways, and represent interest for earlier payments, and are considered when allocating Office Oncost. Items (*b*) and (*c*) appear in the Profit and Loss Account as far as the financial statements are concerned.

Q. 173. How are Production Orders usually classified to indicate the different type and purpose of each piece of work performed?

A. In order to indicate the type and purpose of each Works Order, the following is the usual classification into which Works Orders are divided:

(1) Orders for products specially required by customers;

(2) Orders for products or parts manufactured for stock;

(3) Orders for machines or parts for plant use;

(4) Orders for special tools and implements to be manufactured;

(5) Orders for repairs to products for customers;

(6) Orders for repairs to firm's own plant, machinery and tools; and

(7) Orders for reconditioning spoilt or defective work.

Q. 174. What would be your objections in regad to the following:

(a) The materials and tools were brought by the operatives concerned to their respective jobs; and

(b) The Purchase Invoices were sent by the Buying Office on receipt to the Receiving Department to be checked with the Goods actually received?

A. (*a*) It is always objectionable for the operatives to fetch their materials and tools from the stores to the machines, as production will suffer due to their having to waste their time on work of such an inferior nature. Such duties must fall on general labour so that the efforts of the operatives may not be detracted from productive work. Besides, it would be cheaper to employ an unskilled labourer for such purpose whose wage would be lower than that of a skilled operative.

(*b*) It is never a good plan for the Buying Office to send the original Invoices to the Receiving Department to be checked with the goods actually received. A better method would be to ask the Receiving Department to write out the Goods Received Notes independently after checking the actual qualities of goods received and without reference to corresponding Invoices. A copy of each such Note should be sent by them to the Stores Accountant attached to the Cost Office whose duty it would be to check the contents thereof with their relative Invoices which would be passed on to him by the Buying Office, after the details as to the date of each Invoice and the prices charged are entered by him against each item in the Goods Received Notes. If the Invoices are sent to the Receiving Department, the chances are that those in charge may fill in the Goods Received Notes from the contents of the Invoices without any actual count or check.

Q. 175. A manufacturer produces only two types of particular articles and he invites you to suggest an ideal system to reduce the cost to its lowest terms. How would you advise the cost to be ascertained, and what steps would you suggest to secure greatest efficiency ?

A. With a view to reduce cost to its lowest terms, and to determine the cost of the smallest constituent part of each type of product, it would be necessary to standardise the cost of each of its components. As only two types of products are being repeatedly manufactured, it will not be a difficult affair to fix up the standard cost of every operation, process or component in detail from the analytical records of past performances and accumulated experience. Thus, the material and labour cost of each process or component as also its relative overhead burden will be capable of being determined on the assumption that each section of the works will run under conditions as would tend to maximum efficiency.

With standard costs as the basis, the Production Order for each component will be accompanied by its Cost Sheet indicating in detail the predetermined cost thereof in all its elements.

Strict instructions would be issued to the departmental managers concerned not to exceed such basic costs without proper authority, and to draw the particular attention of those in authority where there happen to be any appreciable difference between the actual and the standard costs. An effective control will thus be maintained by all the discrepancies and wastes being located and investigated.

The Standard Costs must necessarily be amended from time to time and brought on a line with any known variations in costs of labour, material or overheads that may have come to stay due to changes in manufacturing processes or economic conditions of trade.

Q. 176. What system of record would you advise for the transfer of Completed Products into Stock of Finished Goods ?

A. A proper record must be maintained of all manufactured articles transferred into the Finished Goods Stock. This is brought about by the preparation of a Finished Stock Transfer Note every time a completed product is transferred to Stock. Strict instructions should be issued to the Stock-keeper never to receive any products into stock unless such receipts are accompanied by their relative Transfer Notes. The Stock-keeper having initialled such Notes and having entered the contents thereof will pass these on to the Cost Department. Usually, such Transfer Notes are prepared by the foreman with two copies, one of which is sent to the Store-keeper along with the goods, and the other direct to the Cost Department. Such a method enables the latter department to check the copies of the relative Notes when received from the Stock-keeper.

A separate account must be opened for each item of Stock in the Finished Goods Stock Ledger in the same way as the account of each type of stores is maintained in the Stores Ledger.

Q. 177. What are the advantages of maintaining Plant Record Cards or a Plant Register ?

A. The following are the advantages accruing from reliable Plant Records:

(1) A complete list of all machinery duly classified with the relative value of each piece of plant, the date of purchase, the supplier's name and the department in which it is located will be available;

(2) A reliable record would be maintained of transfers of machines from one department to another;

(3) The records would serve as a check on the total capital value of plant and machinery as would appear in the financial books;

(4) They would facilitate a reliable record of the correct repairs and maintenance charges applicable to the different sections of machinery;

(5) They would help secure greater accuracy in ascertaining correct depreciation rates and in calculating depreciation charges attributable to each machine or a group of machines;

(6) They would enable correct values to be assessed for purposes of insurance or for claiming fire losses; and

(7) They would provide a basis for gauging the efficiency of the different types of machines in relation to their maintenance costs and productive capacity.

Q. 178. Give specimen Form of a Plant Record Card.

A.

PLANT RECORD CARD

Description of Machine

Plant No. or Symbol Location Card No.

Date Received	Supplier	Cost Price	Rate of Depreciation	Estimated Residual Value	Special Remarks or conditions with maker

Date	Details	Order No.	Repairs & Maintenance	Depreciation	Total	Net value in Ledger	Sold or Transferred	
							Date	Amount realised

Q. 179. Give arguments for and against inclusion of Interest in Cost Accounts.

A. Considerably divergent views are held by experts as to the desirability of including Interest on Capital in Cost Accounts.

The main argument for and against the inclusion of this item in Cost Accounts may be summarised as under:

For Inclusion:

(1) Interest is as much a charge against profits as wages, and true profit cannot be disclosed until it is included as one of the oncost items.

(2) Where high-powered and costly machinery is used in case of some products and hand labour or cheap machines in others, the comparison of operative costs without due regard to interest may lead to erroneous conclusions.

(3) That the true profit made in any manufacturing business can be measured only by a comparison of what extra earnings have been made beyond a fair rate of interest which is considered as a normal return of capital if invested in gilt-edged securities.

(4) Interest actually paid on borrowed capital cannot be ignored, as all expenses actually incurred by the business within a certain period are deemed to be recovered in costs.

Against Inclusion:

(1) Interest on capital borrowed and invested in business is a matter of finance, and should not enter into the question of production cost.

(2) The inclusion of this item would complicate the costs unnecessarily and may give misleading results.

(3) Where the rates of interest fluctuate, it will be difficult to determine a fair rate chargeable throughout the period.

(4) The value of stock of finished products and stores on hand would be unduly inflated, if costed with inclusion of interest on capital.

Q. 180. In costing, materials may be charged out to jobs at cost price or at market price. Explain which method is in your view preferable, giving your reasons, and state how, under the respective methods, fluctuations in the costing accounts will arise, and under what heading they will appear.

A. Opinions seem to differ on the point whether the materials should be charged out to jobs at cost price or at market price. Normally, it is preferable to charge materials to jobs at cost rather than at current market prices. The ascertainment of cost may be by one of the following methods:

(*a*) The average cost price of material in hand;

(*b*) The actual cost, following the principle of "First in, first out" in respect of the issues; and

(*c*) The market price at date of issue.

In any of the above, a percentage may be added to cover the loss by way of normal wastage in stores.

The advantages accruing to the system of charging out materials at cost prices may be enumerated as under:

(1) Cost Accounts will then show the actual cost, and not what would have been the cost;

(2) The Job accounts will disclose true profits or losses; and

(3) It avoids unnecessary complications and confusing elements, which would be introduced if the materials are charged out at market prices.

Again, when it is difficult to ascertain the market prices of certain articles, the cost price basis is the one which can be safely adopted.

Even while the materials are charged out at cost price, minor fluctuations are likely to arise in Cost Accounts, because of the inherent wastage, but this can be provided for by adding a percentage, as suggested above, to the cost to cover any such loss. If the wastage is not charged out with the materials, it may be regarded as one of the items of Works Oncost. In case of abnormal wastage, however, no such method can be followed; this will have to be shown separately in the Costing Profit and Loss Account.

Where materials are charged out at market prices, the fluctuations in Cost Accounts will be greater, and there will be difference on each stores account representing gain or loss on book value. Such differences can be collected under an account styled "Profit (or Loss) on Purchase of Stores", and then transferred to Costing Profit and Loss Account. This method would show whether the buying of stores in advance was judicious or otherwise.

Similar fluctuations will appear on the Job Accounts, when this method is adopted, due to the rise or fall in the value of materials issued.

Q. 181. How would you deal with the following in Costs:

(a) An abnormal amount spent in advertising, the full benefit of which would be reaped over more than a year; and

(b) An unusually heavy amount expended in overhauling machinery?

A. (*a*) All usual current expenses under this head must be charged to revenue and included in costs. There are occasions, however, when abnormally heavy amounts are spent on a large scale with a view to create a demand for and introduce fresh articles in the market by means of exhibition shows, novelty gifts and similar other methods. Such advertising charges of a non-recurring nature cannot be written off to revenue in their entirety in the very year in which the relative expense is incurred, but should be treated as an item of deferred revenue expenditure, and the total amount expended should be spread over a period of two to three years. In such a case, it should be seen that the amount charged to revenue in each year is recovered in costs.

Similarly, large sums are sometimes expended in printing costly catalogues, leaflets, etc., which may last for a period of two or more years. In such a case also, the total cost of printing and distributing should be spread over the period according to the number of copies consumed, and a proportionate amount only should be written off to revenue each year and included in costs.

The question of inclusion of the estimated advertising expenditure in the periodical costs must be most carefully considered and constant efforts must be made to ensure that the whole of the expense charged to revenue under this head is recovered in costs.

(*b*) A problem arises when an abnormally heavy expenditure is incurred on repairs and replacements or alterations to Plant in any particular year. Such an expense being of a non-recurring nature cannot be written off in its entirety as a revenue charge and included in costing in the very year in which it is incurred. In order to arrive at fair costs, the amount thus expended will have to be distributed over a reasonable number of years for which the benefit of such unusual repairs is likely to last. The repairs of such an extraordinary nature will require a separate Service Order Number.

Q. 182. How should Depreciation be dealt with in Costs ?

A. Where high-powered and costly machinery is used, it is desirable that the depreciation on each or a group of them should be calculated individually, as this would help not only towards arriving at an accurate amount of depreciation to be charged in the financial accounts annually, but would greatly facilitate the correct apportionment of this item from month to month to the different departments or shops using the plant. Further, where machine-hour rate for allocation of expenses is employed, it becomes necessary to ascertain an hourly rate of depreciation for each machine or a group of machines.

The item of Depreciation must be brought into the costs over and above the charge in respect of the maintenance, repairs and cleaning of the machines. As there are several questions governing the loss by depreciation of machinery, greatest possible care needs to be taken in classifying the different types of machinery and estimating the probable life of each such group in order to arrive at a fair estimate of the loss. In large manufacturing businesses, as Depreciation becomes an important element of cost, it is a mistake to treat the item in a loose and slip-shod manner.

The class and quality of machines, the state of efficiency in which they are maintained, their estimated productive life, the probability of improvements due to change in methods of operation, the chances of some of the machines becoming obsolete before the expiration of their normal life, and their estimated realisable scrap value when discarded would all need to be most exhaustively and carefully examined by technical experts, who, on account of their specialised knowledge of the class of Plant and the work it performs, would be in a better position to make a fair estimate of these anticipated losses than the works accountant.

The allocation of the total amount of Depreciation to the administrative, factory and selling oncosts will depend on the class and value of the assets, and the extent to which they are utilized by the different sections of the business. For instance, the total Depreciation on the Plant, Machinery and Fixtures of each productive section will form part of its factory oncost. The Depreciation on the Buildings will be apportioned over the Factory Oncost, Office Oncost, and Selling Oncost, on the basis of the space occupied by the respective sections. Further, the whole of the Plant having first been divided into productive and non-productive class, the latter will be further subdivided according to the class of service rendered. Thus, the amount of Depreciation attributable to the Power Plant will be charged to Power House Expense in order to arrive at the total cost of generating, supply and transmission of power service, whereas that on the Research Plant and Equipment will form part of Laboratory Expense.

Q. 183. Give a list of Non-productive or Auxiliary Services which have a direct bearing on Production Organisation so as to influence its effectiveness to a great extent.

A. The following Services are indispensably essential for Production Control in any Organisation:

Engineering Service;
Power Service;
Estimating Service;
Design and Drawing Service;
Tool Service;
Maintenance Service;
Inspection and Tests Service;
Internal Transport Service;

Standardisation and Simplification;
Budgeting;
Reporting Function; and
Research.

Q. 184. Describe the scope and functions of the Maintenance Department in a large-sized Works.

A. As a considerable amount of capital is usually sunk in any industrial enterprise in factory buildings, productive machinery, material handling and other equipment, it becomes necessary to ensure that these assets are always maintained in a state of excellent working condition, by the institution of an adequate and efficient maintenance service. Any laxity in this respect is sure to entail losses to the concern arising from faulty production, constant break-downs in machinery interfering with the continuous flow of work, and earlier deterioration of machinery. A well-organised maintenance service will thus help materially in securing high efficiency in operative processes and in keeping down manufacturing costs by reducing repairs and replacements.

The great importance of a well-regulated plant maintenance at once becomes apparent when one realises that the production processes of the present-day large-sized works is made possible only through the use of machines and mechanical implements usually run at high speeds. Maintenance work, in order to be properly conducted, must, therefore, call for organised planning and budgeting, regular inspection of plant, issue of periodical reports inviting attention to urgent replacements or overhauling as may be disclosed from inspection, and recording data for purposes of reference.

The scope and functions of the maintenance department will involve:

(1) Maintenance of factory buildings, plant and material handling and other equipment in respect of heat, light, power, compressed air and other services in a state of high efficiency as would help efficient and economic operation, by systematic periodical inspection;

(2) Keeping fire-protection apparatus in a sound condition ready for instant use;

(3) Prompt attention to emergency repairs, which must take precedence over other repair jobs;

(4) Maintaining all plant, machinery and other equipment in excellent condition by constant lubrication and cleaning;

(5) Detecting and removing any cause as would bring about a breakdown or faulty production by regular periodical inspection, and making necessary adjustments or replacements without undue delay;

(6) Arranging for all repair work in due conformity with production and operating requirements so as to cause the least hindrance;

(7) Requisitioning and keeping on hand an adequate supply of suitable materials, stores, tools and spare parts necessary for prompt execution of emergency and other repairs;

(8) Maintaining complete inventories of all machinery and equipment classified into departments and services, and presenting periodical reports of all inspections, repairs and replacements;

(9) Preparing a maintenance budget and controlling maintenance costs;

(10) Making proper estimates of cost of repairs and renewals, as and when necessary;

(11) Ensuring that the maintenance personnel is sufficiently experienced and efficiently trained;

(12) Supplying fullest information regarding the care, use and protection of the plant and equipment;

(13) Systematically planning the work ahead and keeping regular records of all inspections and repairs;

(14) Making reports to the Production or Works Manager for any repairs and replacements which seem to be necessary, and when they would be taken up; and

(15) Compiling estimates for submission to the Works Manager in case of costly replacements, and securing his sanction.

It need hardly be stated that each piece of repairs or replacement work will be taken up, and all materials and labour in respect thereof will be utilised under a Works Expense Order or Service Order with a distinct number, to facilitate costing.

Systematic lubrication and inspection of machinery will tend to bring down the chances of extensive and often expensive breakdowns to their lowest level. A sound policy of anticipating heavy repairs by timely replacements and overhauls must also result in considerable saving of money and consequent reduction in Production Costs.

Q. 185. How should Power Expense be ascertained and dealt with in Costs ?

A. In a factory of any magnitude, the ascertainment of the true cost of the respective kinds of power generated and consumed by the Works is highly essential, as it will not only form an accurate basis for allocating the same amongst the various producing and service departments, but will also help the management towards a comparison of the cost of its own power with that of power obtained from an outside source.

Where a factory produces its own power, the Power House should be regarded as a department by itself, and must bear the whole of its direct and indirect expense. If the power plant furnishes heat and light to the factory, the cost of such service should be separated by deduction from the total power cost, in order to ascertain the cost of the power consumed by the production and other sections.

The various items which comprise the total power cost of any Works will depend upon the class of plant employed and the kinds of power generated. The following items, however, usually go to make up the Power Cost:

(*a*) Salaries to Power House Engineers and Technical Staff;

(*b*) Wages of Foremen, Boilermen, Stokers, Oilers and Cleaners, coal-handling, ash removal and other power house labour;

(*c*) Miscellaneous supplies of Coal, Oil, Waste and Sundry Stores;

(*d*) Water consumed;

(*e*) Repairs and Maintenance of Boilers, Condensers, Economizers, Conveyors, Generating Plant, Transmission Plant, Compressed-Air Plant, etc., etc.;

(*f*) Depreciation on Power Building, and Power House Plant and Machinery;

(*g*) Insurance, Rent and Taxes applicable to Power House; and

(*h*) Administration Expenses—such a portion as is allocated to Power House.

With a view to secure more accurate results, it is generally desirable to separately allocate the power costs as a direct charge to each department. Where costly and high-powered machinery is installed for certain processes, it is sometimes considered necessary to obtain a proper record of the power cost of each separate machine or a group of machines, as such a procedure will tend towards greater accuracy, and, at the same time, will prove valuable in ascertaining the actual running cost of such machines. Besides, a periodical comparison of the cost of current consumption of each group of machines with that of the previous period will be much helpful in bringing to light leakages, if any. The ascertainment of power actually consumed by each department or machine should not present any difficulty, as highly efficient mechanical devices are now available for such purpose.

The total cost of the Power Service is ascertained at the end of each month, and is distributed over the various Producing Departments or Services according to the actual consumption. Such a distribution can be done directly from each separate Power Expense Account, or a separate statement may be prepared to include all the component factors making the total Power Cost, and the amount thus ascertained may then be apportioned over the different Departments or Services in some equitable manner. The main point to ensure is that each Department or Service is burdened with its legitimate share of such expense.

Q. 186. Discuss fully the steps to be taken and the conditions essential for the efficient working of the Estimating Department of a large-scale business where a varied range of Engineering Products are manufactured.

A. In Engineering businesses handling a wide range of products, a separate Estimating Department is maintained for the preparation of all Estimates. The Estimating Department is responsible not only for compiling estimates for filling in tenders for any proposed contracts, but is also required to determine operative processes and sometimes fix the piece-work rates, in close co-operation with the Planning, Production and Cost Departments.

With manufacturers of engineering products, accuracy of estimates is one of the vital factors in the success of the business, and estimating needs most careful handling. The head of the Estimating Department in such businesses should be a highly skilled person, as he fills in a very responsible position. Apart from a sound knowledge of production technique, he must have considerable practical experience of production methods obtaining in the particular concern, and must possess a highly analytical frame of mind capable of intelligently grasping simultaneously a number of factors and coming to a right decision. As his main business is to make a reliable forecast of the probable cost of the products to be manufactured, he has to carefully watch and guard himself against the two-fold danger of over-estimating or under-estimating. If he over-estimates, the chances are that his firm stands to lose the possible orders, whereas in case of an under-estimate, the order can only be executed at a loss to his employers.

The estimator has thus to be well versed in both technical and commercial matters, and should thoroughly acquaint himself with the capacity of his works' machinery and equipment.✓ He must be conversant with all current developments in the particular industry, and the methods followed by the competitors in the same line. His constant study should be as to how to offset the competition. He must be capable of suggesting and discussing possible alternative schemes with his prospective customers and of winning them over to his ideas of things.

The cost of materials may include raw material to be converted into finished products, and in some cases, also partly-completed or finished components bought from outside to be assembled into a complete product. After deciding upon the class, quality and the exact quantity of the materials likely to be employed, the estimator must inquire from the Stores Department, if the requisite quantity is in stock. A complete schedule of materials required will have to be made, and the price of each and the time within which delivery can be obtained must be ascertained.

If the required items are not in stock, the Buying Department will secure the necessary current market rates and will inform the Estimating Department of the present tendency of the market and likely fluctuations. If any parts are required to be bought from outside, their quotations from suppliers should be obtained.

While calculating the material cost, the estimator must make proper allowance in respect of any scrap material resulting from the process of manufacture, and which can be utilised by the business for other purposes. Due allowance will also have to be made in the tender for the probable market fluctuations in the price of materials.

It should be carefully enquired whether the work will necessitate any special patterns, jigs and tools, for in that case, the cost of these will have to be included in the estimate, unless there is a possibility of receiving repeat orders.

For the purpose of correctly estimating the labour cost of the product in view, the estimator must be able to judge the grade of labour required, and the time it would take to manufacture and assemble the necessary components. In the ascertainment of labour cost, the number of processes and the operation time for each must be carefully estimated, and the rates accordingly determined.

If similar work has been undertaken in the past, previous cost records will furnish reliable data to work upon. Of course, the necessary adjustments will have to be made in regard to any fluctuations in the price of labour and material since the execution of the last order. In case of estimates for work of an entirely new type, the departmental managers or foremen would occasionally be able to render valuable assistance in estimating the labour cost to a fair degree of accuracy.

Where there is a separate rate-fixing section, the drawings and processes laid down by the Estimating Department may be passed on to that section for supply of necessary rates.

The correct inclusion of overhead charges in respect of works and general oncosts will depend upon the method of allocation adopted by the concern. The necessary information in this connection will be supplied by the Cost Office. If the allocation of the works oncost is on the basis of an hourly burden applicable to the class of plant concerned, the details as to the estimated production hours and the type of machines to be used will be supplied by the rate-fixing department.

There will then remain the question of general oncost to be included, which is usually taken on the basis of a certain percentage on the factory cost.

Where a varied range of engineering products is dealt in on a large scale, the whole of the works would be divided into a number of distinct shops, each shop specialising in manufacturing one or more particular type of products. In such a case, a certain amount of specialisation will be called for from the Estimating Department, and the several members of its staff will confine themselves to certain types of products. There must then be an engineering expert through whose hands all estimates must finally emerge as passed.

Every estimate should be given a serial number and properly filed, and on its maturing into an order, the corresponding Works Order should specify that number for purposes of reference.

The estimator must be methodical in his work, and must so arrange his files and records as to have all routine details immediately available to him as and when desired. In framing their tenders, the Estimating Department should have available to them the cost summaries of any similar work previously done.

The estimator must possess natural ability and tact to co-operate wholeheartedly with the Designing, Planning, Stores, Rate-fixing and Production Departments, in order to secure most efficient results.

Due allowance must always be made for contingencies, and the estimate must include cost of testing, assembling, and erecting, where necessary.

Where a definite date of delivery has been specifically promised, allowance will have to be made in respect of any likely overtime work.

The estimate having been completed will be passed on to the Sales Department for the dispatch of the quotation or tender.

Q. 187. What system of wage-payment would you advise in a large-sized manufacturing concern, as would satisfy the aspirations of the workers and bring forth their willing co-operation ?

A. While introducing a system of wage-payment, the following main factors should be carefully considered in order that they may serve as an effective incentive to efficient efforts:

(1) The system should guarantee an adequate minimum day-wage;

(2) It must have the full consent of the workers, who should be satisfied with its equitable working;

(3) It must reward the individual worker according to his capacity and merits;

(4) It should be simple in its working so as to be readily understood by the workers;

(5) It should not entail heavy clerical work and thus unduly tell on the ultimate cost;

(6) The method should result in securing the necessary quantity of output without in any way affecting the quality;

(7) It should not result in any wastage of material and careless use of plant and equipment;

(8) It should help towards increase in output and yet result in saving of time so as to reduce the incidence of overhead;

(9) That once the Piece-work or Bonus Rates are determined, the system should guarantee against any subsequent rate-cutting, except in case of any modification in methods of production;

(10) The system must provide for adequate supervision and rigid inspection in order to maintain the quality standard;

(11) The Premium or Bonus should be in cash and should be payable along with the wages, and not deferred till the ascertainment of periodical trading results;

(12) The working of the system should be supervised by a committee on which labour should be represented;

(13) The Premium or Efficiency Bonus Rates must be fixed after most exhaustive and equitable Time Studies; and

(14) The system should be fair to the employers and employees alike.

Q. 188. If appointed to investigate into the efficiency of the Costing Method installed by an Industrial Concern, to what particular points would you direct your attention ?

A. The following points would call for particular attention:

System of Costing:

(1) Whether the System of Costing is suitable to the industry in particular.

(2) How far the Financial and Subsidiary Records help towards the securing of the necessary information for costing.

(3) Whether the departmentalisation of the works and the division of productive and non-productive services are made on sound and systematic lines as would facilitate proper costing.

(4) Whether the Cost Books have been maintained on Double-Entry principles.

Materials and Stores:

(1) What check there is on the ordering of Materials and Stores.

(2) Methods of receipts and issues of Stores, and the records in respect thereof.

(3) Pricing of Stores Issue Requisitions.

(4) Method of valuation of the Stores on hand at the end of the Financial period, and how the difference arising from usual leakages and wastages has been dealt with.

(5) From what records are weekly or monthly Analysis Sheets obtained for the purpose of charging Materials and Stores in Costs.

Labour:

(1) Method of recording workers' times.

(2) How far there are checks and counter-checks on the record of wages earned, the compilation of pay-rolls and the subsequent payment thereof.

(3) Whether the collection, classification and recovery of wages from Costs are done on proper lines so that each job, department, or a group of products is charged with its legitimate share thereof.

(4) Whether there is proper ascertainment and record of overtime and short-time.

(5) How the advances to workers are dealt with.

Works Oncost:

(1) Whether the financial record of the Productive and Non-productive works-expenses admits of proper collection, classification and apportionment of the Works Oncost.

(2) Whether the basis of allocation of expenses to the several departments, jobs or services is sound.

(3) The treatment of by-products, if any, as also of scrap, wastages and leakages in cost accounts.

Establishment Oncosts:

Whether these are treated separately from Works Oncosts, and the basis of their allocation in Costs.

General:

(1) Whether proper distinction is drawn in connection with the materials, labour and expenses on capital expenditure, such as plant installations, extension of works buildings, etc.

(2) The basis of valuation of work-in-progress.

(3) How far the results shown by Costing reconcile with the results as per the Financial Books, and whether the difference, if any, has been duly accounted for.

Q. 189. What part do Statistics and Statistical Data play in the efficient Reporting Function of a manufacturing business?

A. There is no section of a manufacturing business in which statistics will not prove a guide to those in management and control as to how far the business is conducted efficiently. An intelligent use of reliable and efficient statistical data will serve to maintain all the sections of the business and all levels of its diverse executive activities in a state of balance and effective co-ordination. It is by a constant and accurate measure and record of the performance of men, material, machines and methods with relation to a scheduled production that factory operations can be controlled. By the preparation of statistical data and charts in suitable forms, those in control can have a comprehensive survey of the functioning of the several operations and stages of production, of the shortcomings disclosed therefrom, and of the trading and financial position of the concern as a whole.

Correct and prompt statistical information will also be of immense value in securing rigid control over cost records and costing. It will serve to intelligently interpret cost accounts, and help the management in closely studying the proper analyses and allocation of the expenses attributable to production, management and distribution. It will greatly facilitate a reliable comparison of the preceding year's figures, and serve to point out any appreciable fluctuations in cost of material, wages or shop expenses.

Comparative reports on material, labour and oncost charges in relation to the volume of production from period to period, reports in regard to idle time of men and machines, reports on rejections, comparison of actual performance with that as scheduled, reports on labour turnover, stock discrepancies, costs of jobs as compared to estimates, shortage list from progress chaser, etc., must all serve to give data of immense value, provided they are prompt, reliable and concise. They would indicate all deficiencies and departures from the set standard, and enable the management to find out the causes for any existing defects and take necessary action to set the defects right. They would also help disclose the parties responsible for any lapses.

To ensure close supervision and control, each subordinate executive must submit regular reports and returns to his immediate superior in higher line of authority in order to keep him well informed as to the trend of the work and enable him to judge how far the pre-determined results have been achieved. Reporting thus serves the purpose of supplying a steady flow of most useful information to the several executives in higher control with due regard to the nature of their individual work and specific responsibility.

Compressed analytical information must prove to be of enormous benefit to the Production, Progress and Estimating Departments by reflecting the true state of affairs and bringing to light the root cause of any trouble, so that necessary steps may be taken to prevent its recurrence. They will help further to trace the department or individual at fault, in order that the responsibility for any deficiency, default or laxity may be definitely fixed.

The information should be available either daily, weekly or monthly as the nature of the business may demand, to enable the Works Manager to readily perceive the situation. In order that his attention may be drawn to the most vital points of the results, it is necessary to mark these conspicuously so as to save his time and efforts. As much care should, therefore, be taken in the presentation of the data as in their collection.

Q. 190. Give some typical examples of Periodical Reports issued by different responsible officials to give information regarding the trend of the business in different directions.

A. The following few instances will serve to give an idea of the varied purposes served by these Periodical Reports:

1. **Reports on Rejections.**—These would be issued by the Inspection Department, at periodical intervals, weekly or monthly, and would help determine the deficiencies of the various departments in regard to faulty materials, faulty machines, wrong methods of work, careless workmanship, or want of proper instructions, or careless tool-setting.

2. **Reports on Running of Machines and Idle Time.**—These would be issued by each foreman through the Departmental Head pointing out the machines left idle due to breakdown, want of power or materials or tools, or lack of proper planning or adequate instructions. They also disclose Idle Time of workers.

3. **Reports on Production and Orders on Hand.**—These will serve to indicate how the production work keeps pace with the orders ahead.

4. **Departmental Labour Reports.**—Showing the number of workers, output per worker, absentees, numbers of hours worked, labour turnover, etc. These will serve to bring out inefficiency of the Labour Department, or the foreman responsible.

5. **Reports on Costs of Jobs compared to Estimates.**—A periodical Report of this nature will bring to light the causes for any variations either in material, labour or overhead from the estimates or the standards set, and help considerably in checking the productive efficiency of each department.

6. **Reports on Stores consumed and quantities on hand.**—These will serve to indicate what increases or decreases there have been from the normal levels, and will help modify the maximum or minimum limits of any items of stores. They will also serve to point out if there has been any waste of materials.

7. **Reports on Shortages from Progress Chaser.**—These will show what shortages of components there are which should need immediate attention, so that the final assembly and delivery of the complete products may not be held over.

8. **Reports of periodical Sales.**—These will enable a comparison with the estimated sales for each period, and will point out the causes for any falling back from the budgeted figures.

9. **Reports on Sales and Publicity Expenses.**—These will help determine whether such expenses are well within the budgeted limits, and how far any items have exceeded the levels and why.

Q. 191. What Periodical Reports should be placed before the General Manager or the Managing Director of an Industrial Business ?

A. The Chief Executive would need periodical report on the following matters:

(1) Available working capital, showing details of liquid assets and current liabilities;

(2) Amount of capital locked up in stock ot raw materials, work-in-progress and stock of finished goods and components;

(3) Extensions, additions and alterations to plant and machinery;

(4) Gross profit represented by the margin between the costs and selling prices;

(5) Net profit determined after deduction of distribution and administration costs ;

(6) Analyses of indebtedness, credits and collections;

(7) Comparative volume of production and sales, and the rate of output as compared to the rate of orders;

(8) Stock of raw materials as compared to periodical consumption;

(9) Increase or decrease in employment of labour, and the corresponding increase or decrease in production;

(10) Fluctuations in price level of material and labour;

(11) Fluctuations in market value of products;

(12) Amounts actually expended periodically in respect of material and labour cost, as also detailed factory and administration expenses as compared to the amounts estimated or budgeted;

(13) Reports on contracts and commitments;

(14) Comparative reports of marketing and publicity operations;

(15) Engineering reports relating to research work, development, designs, and plant activity;

(16) Purchasing Department Reports;
(17) Personnel Department Reports;
(18) Power Plant Reports;
(19) Inspection Department Reports;
(20) Maintenance Reports;
(21) Production Control Reports; and
(22) The trend of economic and general business conditions.

Q. 192. What Reports should be supplied to the Works Manager periodically ?

A. The Works Manager will have to be supplied with the following reports or charts dealing with the functioning of the factory:

(1) Survey of Factory Orders;
(2) Departmental Progress Sheets indicating the functioning of each section of the Works;
(3) Movement of material in each department in quantity and cost;
(4) Departmental direct labour employed and cost of labour in sections and classes, and the corresponding production by each department, section or type;
(5) Progress of each individual product or a group of products;
(6) Running time of machines and the work done by machines in each department;
(7) Material or labour wasted by each department;
(8) Cost of power and incidental and miscellaneous shop charges of each department;
(9) Comparisons drawn between orders and products, orders and deliveries, and how these compare with the average trend;
(10) Amount of work ahead of machines, etc.;
(11) Departmental Oncost Rates as compared with estimates;
(12) Departmental cost of transporting and handling material;
(13) Current material prices, wage rates and operating efficiencies; and
(14) Cost Sheets showing comparative unit costs with their corresponding estimated costs. The Cost Sheets should indicate clearly which of the items specified below are responsible for any increase or decrease in costs:
    (*a*) Price of raw material,
    (*b*) Material Efficiency,
    (*c*) Wage Rates,

(*d*) Time taken on production,
(*e*) Efficiency of the plant,
(*f*) Cost of Power consumed,
(*g*) Spoiled time, idle time, short time,
(*h*) Overtime or shift work,
(*i*) Indirect labour, and
(*j*) Indirect Material.

Q. 193. What periodical Reports should each Departmental Manager receive ?

A. Each Departmental Manager will have to be supplied with statistical data relating to his own department as to:

(1) The running time and running cost of machines;
(2) Time put in by labour divided into sections and types;
(3) Overtime, spoiled time, or short-time by workers;
(4) Material consumed and spoiled;
(5) The amount of work turned out;
(6) Indirect labour and indirect material expenses;
(7) Work-in-progress and work awaiting to be taken in hand;
(8) Percentage of piece-work hours to total hours;
(9) Volume of production by classes of products;
(10) Analysis of manufacturing expenses with budget estimates; and
(11) Analysis of labour turnover.

Q. 194. What Reports will each Departmental Foreman have to supply periodically to the Works Manager ?

A. Each Departmental Foreman will have to supply the following reports:

(1) Daily attendance of labour and absenteeism;
(2) Accidents;
(3) Idle Machines and Idle Time—with causes;
(4) Overtime and short-time;
(5) Interruptions to production with causes;
(6) Machine repairs with causes;
(7) Productive and Service Man-hours;
(8) Volume of production;
(9) Number employed on Day-work and Piece-work; and
(10) Defective work with causes.

Q. 195. What periodical Reports will the Costing Department have to present to the Works Management ?

A. The Costing Department must present to the management, at short periodical intervals, statistical information on the following matters indicating variations in costs and operating results:

(1) Cost of Works Orders indicating fluctuations in costs of production and including Prime Costs, indicating variations, in material and labour costs and chargeable expenses;

(2) Comparison of actual costs with those estimated, pointing out any deviations and the reasons thereof;

(3) The rates of overhead charges, under appropriate analytical heads, recovered from costs as compared to the true rates;

(4) Statement of idle time of men and machines with causes;

(5) Total capacity of the Works and the percentage worked;

(6) Ratio of Works cost to value of orders; and

(7) Profit or loss on orders executed.

Q. 196. What information, if any, should be available to the Sales Manager periodically ?

A. To the Sales Manager, periodical statistical information on the following matters would prove valuable:

(1) The total sales of each type of product, in quantity and value, divided into the territories concerned;

(2) The total distribution and selling expenses;

(3) Comparison of Sales with budgeted estimates divided into territories;

(4) Sales Expense by products and territory in comparison to budgeted figures;

(5) Publicity costs and publicity results;

(6) Comparative results of the salesmen's efforts;

(7) Unexecuted orders ahead;

(8) Order cancellations with causes;

(9) Claims and adjustments;

(10) Analysis of finished stock; and

(11) New territories developed and new customers.

Q. 197. State briefly what important factors should be borne in mind for any statistical information conveyed in shape of Reports, Charts and Graphs to be really serviceable.

A. Before planning a system of statistical reports and charts, it is essential to carefully determine (*a*) what reports should be submitted to each executive for the more effective performance of his work, (*b*) in what form they should be presented, (*c*) precisely what information should they individually contain, (*d*) how the facts can best be obtained, summarised and arranged, and (*e*) at what intervals they should be presented.

It should be determined after most careful inquiry as to which executives need reports, what precise data they need, in what forms the information should be submitted, and at what periodical intervals they should be presented. Once the form any particular report should take is decided upon, it should be rigidly followed, as otherwise, comparisons would be rendered more difficult, and the points of departures and variations would not be effectively presented and grasped.

The accounting system and the forms of records should be so shaped as to provide the desired information and facilitate the prompt preparation of the required reports.

Unnecessary details should be avoided, as those in higher authority have neither the time nor any interest in details. What they are chiefly concerned with are the trends or the relationships of the actual accomplishments with the budgeted or estimated forecasts. The specific needs of each particular executive would thus need to be studied before determining the form and preparing the report.

The sub-division of work involved and the analytical details for information must not be carried too far and made unnecessarily cumbersome. There should be no overdoing of this process, no duplication of work, and no efforts out of all proportions to the benefits derived.

The data must be accurate and reliable, as otherwise the information conveyed would be misleading and, in some cases, might prove disastrous.

The information must be conveyed in a simple, condensed and readable form as would readily present a comparative idea of things so that useful deductions may be drawn therefrom and acted upon.

The Forms used must be standardised when found suitable, and each form should be known by a definite number.

The tabulated reports or charts should be presented at regular intervals.

The charts or tabulated reports must be so drawn as to indicate a normal base line, so that any variations from the standard average may be clearly brought out, and immediate attention may be drawn to results better or worse than the normal.

They must embody a comparison of the current results with those of the past for a similar period.

It is important that those before whom they are presented should be conversant with the elements of statistics and statistical methods in connection with production and of evaluating variables, and must possess the requisite knowledge and experience to fully understand and appreciate the exact nature and true significance of the vital facts as disclosed by such charts, so as to draw right conclusions therefrom.

Q. 198. Explain carefully what purpose is served by Budgetary Control, and state its advantages to a large-scale manufacturing enterprise.

A. Systematic budgeting plays a highly important part in controlling expenditure under numerous heads in any industrial enterprise. It enables those in management to allocate definite responsibility and authority, and helps them to evaluate the efficiency of the different sections of the business by a close analysis and scrutiny of any variations between the planned estimate and the amount actually expended. The ever-widening complexities of large-scale undertakings have brought the functions of budgeting in increasing value, and a well-regulated system of budgetary control must find its right place in every modern structure of industrial organisation.

The main purpose of budgeting is to aid in the systematic planning and control of manufacturing operations and other activities from period to period by predetermining a performance objective for each activity, and affording a medium for comparison of actual performance with the planned objective. It serves as a most useful guide to departmental executives in formulating clear-cut and definite policies, determining their financial requirements and controlling their expenditure over a certain period. It aids considerably in increasing the effectiveness of supervision and control over the varied functions of the factory by enabling those in management to ascertain how far the actual accomplishments of each department or function stand in comparison to the planned programmes, and what departures there have been.

The success of budgetary control must depend on the adequacy and reliability of records of the past and present performances, on the interest of all executives and subordinates in the purposes of such control, proper departmentalization and sub-division of factory activities, a close classification and proper division and analysis of the expenditure, and most suitable systems of cost and financial accounts.

In order to ensure a strict hold on the details of each section or function of any large-scale business, it would be necessary to frame periodical budgets in advance relating to Capital Expenditure, Sales, Production Programme, Materials, Labour, and Manufacturing and Administrative Expenses.

A well-planned and carefully prepared budget under each of the above heads will not only serve as an instrument in arriving at an estimate of working capital needs for each section of the business over each period, but will afford a valuable basis for financial control by keeping the multifarious expenses within reasonable limits. Most satisfactory results from budgeting must depend upon frequent comparisons between budget allowances of each sectional unit and the expenditure involved in actual performance. All variations from the budgeted figures having been closely examined and their causes being determined, useful standards would be provided for the future. It is important, however, to note that such budgets are drawn up not on snap judgments and hasty decisions, but are based upon facts and figures resulting from a careful analysis of all conditions as actually obtained in the past, with due allowance for any contemplated changes in the future productive or managerial methods of the organisation.

Q. 199. Explain clearly the purposes served by the following Budgets:
(a) Sales Budget;
(b) Production Budget;
(c) Materials Budget;
(d) Labour Budget;
(e) Manufacturing Expense Budget;
(f) Administrative Expense Budget;
(g) Plant & Equipment Budget; and
(h) Financial Budget.

A. Sales Budget.—As the whole of the activities of the productive departments must be based on the estimated sales covering a particular period in advance, a Sales Budget would need to be drawn out first. The Sales Budget will thus represent a close and accurate estimate of what the factory will be called upon to produce to meet the sales requirements during the budget period. It would involve forecasting of sales both in quantity and value classified into distinctive lines and territories, the expenses relative to such sales and publicity divided into departments, and the necessary financing in respect thereof. The sales budget would thus set up a programme of anticipated sales over a definite period against which actual achievements can be measured.

Production Budget.—A balanced Production Programme based on the sales requirements will tend towards maximum operating efficiency by helping to secure necessary raw materials, labour and tools in time for production, will stabilise productive activity by a fuller utilisation of machines and man-power, and facilitate deliveries in time to meet customers' requirements. It will help towards production planning and controlling all manufacturing activities with their relative expenses.

Materials Budget.—A forecast of material requirements to cover the production budget will consist of the quantity and quality of each item of raw materials that would be necessary to maintain the production schedule. It will help the Buying Office in planning the necessary purchases and placing contracts at favourable rates. It will also enable smooth flow of work without any hindrances due to shortage of materials, and at the same time, prevent over-buying. It will further help the financial department to know in advance the requisite outlay for material requirements. It will further ensure an effective means of control by comparison of material costs with budgeted estimates.

Labour Budget.—The preparation of the Labour Budget must call for a careful estimate of the number and kind of workers required to produce the quantity and quality of goods as per the budget programme. The labour records of past performances will serve a useful purpose of ascertaining the standard times necessary for the accomplishment of each operation or process. Such budget will also enable the Labour Department in ensuring the availability of the necessary number and grade of workers in time for the production. It will also help to control the direct labour costs with the budgeted figures.

Manufacturing Expense Budget.—As the expenditure incurred in the manufacturing of the product other than the cost of direct materials and direct labour is usually very heavy, it is extremely desirable that this group of expenses should be rigidly controlled by means of budgeted estimates under each head being compared at frequent intervals with the amounts actually expended. For a most efficient control over the vast variety of expenses incurred, it would be necessary first to divide the works into productive and non-productive sections, and then to sub-divide each section into the several operating and auxiliary services worked in each.

Administrative Expense Budget.—It is equally necessary to see that the various expenses of administration and sales, after being properly classified and analysed, are budgeted with most careful enquiry into the facts and figures, and then such budgeted figures be compared at short intervals to ascertain how far the amounts expended are in accordance with the predetermined estimates.

Plant and Equipment Budget.—A Budget for amounts that would likely be spent on plant and equipment by way of acquisition of new plant to replace any obsolete or worn-out machines, or for expansion of business to meet increased demand for the firm's products, or to add any allied lines, would also prove immensely useful.

Financial Budget.—A Financial Budget representing a composite statement including all predetermined expense and income budgets, would serve to indicate what profits are anticipated as resulting from the operations covering the period.

Q. 200. Explain what Time and Motion Studies mean, and what benefits accrue therefrom.

A. The measurement and evaluation of productive efforts presents a number of difficulties due firstly to the complex nature of the varied types of work, and secondly to the further complications introduced by the human element resulting from wide variations in intelligence and physical capacity of the different wage-earners. The determination of good work and a fair and satisfactory wage thus becomes a matter of utmost importance, and calls for thoughtful inquiry and attention. In this connection, Time and Motion Studies with their searching scientific analysis of machines, methods and environmental conditions of work have done an immense service to industry by substituting factual information for haphazard opinion, and measurement for guess-work. They have proved immensely valuable in the scientific measurement of each piece of work by a close analysis of the time taken and the movements involved in the performance of each of its elemental operations, and have helped ascertain the quickest and the best method of performing it.

The object of Time Study is to determine by experiment what amount of time each component of any given piece of work would take a worker of average ability to perform, so as to serve as a basis for setting the wage rate. The object of Motion Study is to simplify the methods of each operation by dividing the work into simple elementary motions, and then detecting and eliminating all superfluous or wrong movements by the operatives. It has also in view the improvement and standardisation of equipment and conditions of work as would result in ease, economy and efficiency in performance.

Time and Motion Study embodies within itself job analysis for standardisation and improvement of implements, methods and conditions of work so as to economise time and efforts required to do any particular job. It further involves a close and scientific investigation into all the factors or elements entering into production work, viz., the elemental operations required to complete each component, the type, quality and quantity of materials required, the equipment to be employed, and the time necessary to perform the task under definite desirable workshop conditions in order to eliminate all avoidable waste of time, materials and efforts. It introduces elements of consistency, fairness and accuracy in measuring qualitative and quantitative values of the different types of jobs to help arrive at an equitable method of remunerating labour.

A careful Motion Study is a vital prerequisite to Time Study, as the cutting down of all unnecessary movements must effect a saving of time in carrying out any specific job. A systematic application of Time and Motion Studies conducted on sound lines coupled with an accurate analytical record of the observations and results obtained would, by revealing the defective factors and conditions surrounding and accompanying each piece of work, serve to control the productive efficiency of men and machines, the proper placement of men to the jobs, and facilitate wage payment in due relation to output and effective performance.

Q. 201. Mention the main steps towards a satisfactory performance of Time and Motion Studies.

A. The main steps towards proper Time and Motion Studies consist of:

(1) A close and critical analysis of each product into its elemental components, and the collection of job data in relation to the requisite expenditure of machines, material, labour, methods, auxiliary services and oncosts on each such product or a unit of products;

(2) A careful division of each such component into simple elementary operations necessary for its production;

(3) An exhaustive study of the materials, labour, the production technique employed in the manufacturing of each component, the methods of material and tool handling, and other physical conditions of work including lighting, temperature, maintenance of plant and desirable working environments, in order to find out the best methods of work;

(4) Making a careful survey and analysis of each job to determine the type of skill required in its performance, and picking out the operators with varied grades of skill whose work is to be subjected to Time and Motion Studies for working the identical operation, and noting with the aid of a stop-watch the time taken individually by the several workers;

(5) Making careful observations and notes of the number and type of movements made by each operator, and the variations in the motions and methods employed by each of them;

(6) Ascertaining the simplest and the quickest mode of performance of each operation by discarding all useless and wasteful movements, and by making requisite improvements in the position of the machines and postures of the operators, in the implements and tools, lighting and other factors, so as to influence more economical and uniform production;

(7) Having determined the average standard time that a worker of suitable ability would take to complete each operation, a percentage would be added to cover unavoidable delays due to setting up of machines, grinding and adjusting of tools, and other minor interruptions;

(8) This will give the total standard time required in the proper execution of each single operation under ideal and consistent conditions of work;

(9) The sum total of the times ascertained as above for the performance of all the operations needed to finish a component will represent its total time; and

(10) A time allowance for resting period necessary to enable the operative to recoup lost energy due to physical fatigue will also have to be made.

Throughout the study, all the varied factors attaching to the proper execution of the work including the efficiency of the machines and implements, the handling of the materials and tools, the approach of the workers to the jobs, and the physical and environmental conditions will have to be carefully watched in order to find out any defective and objectionable surroundings, methods and equipment which would obstruct efficiency. It would equally be necessary to observe the performance of several skilled workers on each operation, in order to obtain reliable characteristic results for the setting up of standards.

Q. 202. On what basis would Depreciation on Patterns be dealt with ?

A. The material and labour cost of any patterns utilised for temporary purposes and not having a permanent value will have to be written off as a revenue charge, and will be included in Works Oncost. All amounts expended on repairs and maintenance of patterns in current use will also have to be similarly treated.

When a pattern relates to a special order from a customer, and if the latter has paid for it, the same becomes the customer's property, and the question of including its cost in the recovery of expenses does not arise.

A safe and reliable method of dealing with Patterns is to value these on a most conservative basis at the end of each year, and while allowing such a figure to remain in the books as an asset, to write off any extra debit balance remaining on the Patterns Account. The amount thus charged to revenue must be included in the Works Oncost, and should be recovered in some equitable manner from such sections, products or jobs as may have utilised these.

Usually, the annual charge on this account should be budgeted in advance for the purpose of recovery in costs on the basis of past experience, and, in case of a new business, where there is no data to work upon, to include this item on the basis of some reasonable estimate. In either case, the estimated figure should be compared with the actual loss on account of Patterns, at periodical intervals, in order to ascertain how far the estimate was correct.

If there is any appreciable difference, the item would need to be adjusted in future costs.

Q. 203. How should Tools be depreciated ?

A. There are two distinct methods of arriving at the depreciation on small perishable tools. The one method is to make an inventory of such tools on hand and in use at the end of each financial period, and to deduct the amount thus ascertained from the book value of the opening stock of tools plus the purchases made during the year. The difference would then represent the depreciation in value of tools. The valuation of tools on hand for such purpose is generally taken at two-thirds or half the price originally paid, for in spite of the fact that such tools exist, they cannot be of the same value after a year's use as they actually cost when they were acquired.

Another method is to treat the original cost of equipment in tools as an asset at a constant figure, and to charge off all replacements during the year as depreciation. When this method is used, it would be desirable to take actual stock of tools at the end of at least three years with a view to ascertain that the Tools Equipment is not considerably over- or under-stated. Any under- or over-depreciation thus brought to light may then be adjusted.

Another important point that needs to be remembered is that any actual additions of costly tools, if made at any time, to the tools equipment due either to extension of Works or change in methods of operation, should be considered as an additional capital outlay, and should not be treated as a replacement.

Tools Depreciation will be included in Tools Expense, and will form part of Works Oncost. The actual allocation of this expense amongst the various productive sections can be easily made by the use of special Service Order Numbers.

Q. 204. State what items should be included under heading of General Establishment Overhead in a Building Contractor's business.

A. There will be several items of expenses of a general nature which cannot be directly attributed to any contracts in particular. These will have, therefore, to be apportioned over the contracts worked during each period, on some equitable basis, as under:

(*a*) Salaries of manager or constructional architect or engineer—on the basis of the cost of work done on each contract, or in accordance with the time spent on each contract;

(*b*) Storekeeper's Wages and Store-room Expenses—on the basis of the value of materials and stores consumed;

(*c*) Wages Office Expenses—on the basis of the amount of wages or the number of labour-hours; and

(*d*) Other Administrative and Office Expenses, such as Salaries to Clerical Staff, Telephone, Printing and Stationery, Advertising, Office Rent, Lighting, Insurance, etc., would be allocated on the basis of either the cost of the work done on each contract, or on the basis of labour-hours. The labour-hour basis for the allocation of all Indirect Expenses has generally been found in practice to be more suitable than the other methods.

Where any hire has been paid for the use of heavy plant for a contract, the hiring charges should be debited direct to the Contract Account in question.

Q. 205. What points would call for careful attention in the ascertainment of Colliery Costs.

A. In the ascertainment of Colliery Costs, the following points need to be carefully noted:

(1) The cost of plant, equipment and all other tools and appliances represent capital expenditure;

(2) All expenses incurred towards the development of mine till the coal is won would also be treated as part of the capital cost;

(3) The development expenses cease once the mine is developed, and all subsequent expenses relating to winning of coal should be classed as operating charges;

(4) As the value of a mine depreciates year after year in due proportion to what the annual output bears to the total estimated capacity of the mine, it is necessary to treat this depreciation as an item of cost by including it in the operating cost;

(5) The entire capital cost should be divided by the total estimated tonnage in order to arrive at the rate per ton to be charged to the cost, so that the total capital sunk may be recovered;

(6) All sums expended in repairs and replacement should form part of the operating costs;

(7) All extensions to the mine should be treated as further capital expenditure, and should be recovered from costs in the same manner as the original capital cost; and

(8) When any unusually heavy expenditure has to be incurred by way of replacement of equipment such as worn-out tubs, old timber and maintenance of old tracks and laying of new ones, etc., the same cannot be charged against the operating costs of the output for the period, but may be spread over a reasonable number of years.

CHAPTER XII

GENERAL TECHNIQUE OF FACTORY ORGANISATION

Q. 206. Outline the fundamental principles of Factory Organisation. State the main distinction between Factory Administration, Management and Organisation.

A. Administration of a Factory consists in the formulating of policies best suited to the needs of each particular business, directing its activities, analysing the results of actual performances, and utilising the resultant data towards improvement of productive efficiency.

Management holds itself responsible for the faithful application of the policies as laid down by those in administration, and the proper execution and supervision of the everyday functions of all the sections of the business in a well-planned method.

Organisation means the close and careful inter-linking and co-ordinating of the varied activities of the business so as to ensure effective control of the numerous and diverse functions of administration and management, with a view to weave the entire fabric into a harmonious and effective entity for the purpose of accomplishing a set objective with ease, economy and efficiency.

The fundamental principles governing the organisation of any Factory may broadly be summed up as:

(1) Framing the regulations, defining the responsibilities as well as duties, and limiting the scope of authority of the various individuals and groups of individuals employed in carrying out the objects of the concern; and

(2) The effective interlocking of the activities of individuals and groups of individuals in such a manner that they co-operate for the common good most harmoniously and economically.

In so defining the duties and limiting the scope of each individual's work, sound organisation would concern itself with seeing that each one is allotted the job for which he is best suited by experience, training and temperament, so that the available man-power is utilised to maximum advantage. The main point which any organisation should guard against is that there is no conflict of duties and overlapping of authority.

A vitally dominant factor in the smooth and efficient working of any organisation is the achievement of most cordial relations between the higher executives, the subordinates and the workers, so that all may feel inclined to give their best for the common object in view.

An equally vital point to be borne in mind is that the Organisation need not be unnecessarily complex and unwieldy, but must be most suitable to the needs of the business, simple, economic, and flexible, so as to be capable of modifications as circumstances may call for.

Q. 207. Outline briefly the duties of the Planning Department.

A. The chief duties of the Planning Department involve the following:

(1) Seeing to the proper lay-out of workshops, machinery and equipment, and ensuring that the right conditions for maximum output are installed and efficiently maintained;

(2) Laying down the production schedule in advance and marking the orders in which the jobs must be performed;

(3) Fixing the most economical quantity at one time of manufacture which can be adequately controlled;

(4) Compiling specifications, issuing instructions with regard to the performance of jobs, and determining the routine of operations through the shops;

(5) Closely co-operating with the rate-fixing department with regard to the time allowances for the manufacturing operations;

(6) Co-ordinating its activities with the Design, Progress and Inspection Departments to secure quality and economy in manufacture, and for facilitating production work as scheduled;

(7) Deciding upon the quantity and quality of materials required, and specifying the appropriate machines and tools to be used;

(8) Maintaining detailed lists of plant, machinery, tools, jigs, etc., together with their working capacities;

(9) Seeing to improvement in machinery or variation in existing methods of operation as would tend to give more economic results, and securing the introduction of any new plant and equipment as may be found necessary to keep the designs and processes up-to-date;

(10) Co-operating with Stores and Tools Departments to have the materials, stores supplies and tools ready at hand for the due fulfilment of the production programme, and to place orders for any special tools needed;

(11) Keeping in constant touch with the Sales Department for changes in designs or quality of products; and

(12) Filing properly the Completed Job Tickets as returned by the Costing Office to compare how far the time actually taken on completion

of jobs agree with their predetermined time, so as to serve as a guide for future time allowances for similar operations.

✓**Q. 208. Describe carefully the factors which materially influence an efficient plant equipment and lay-out.**

A. The lay-out of a plant depends primarily upon the processes required in the manufacture of the product, and the flow of material from one process to another through the plant. The producing departments must be so logically arranged that the production may flow from one department to another without any inconvenience of operation and unnecessary trucking and material handling.

An ideal plant equipment and lay-out must take full account of the most efficient sequence of operations, and also of the durability and simplicity of machines as would tend to ease of operation, control and maintenance, and result ultimately in cost reduction. Factors relating to original cost and productive capacity of the machines, their running costs and maintenance charges, depreciation and probable chances of obsolescence must all be brought into review in planning the acquisition of industrial plant.

Ample provision must be made for the specific needs and special features of each department. There should also be sufficient provision for flexibility in order to take advantage of any improvements in machines and methods, as also for future expansion.

The number of machines and their relative position and grouping will depend upon the nature of the industry. There are in general two methods of grouping machines. The one is known as Process Grouping under which all machines required for one type of process are located in one department. The other method called Product Grouping consists of arranging all the machines needed to make a product in sequence of operations in one department. Each method has its own advantages and disadvantages, and it follows, therefore, that the arrangement and grouping of machines must call for most careful consideration after bringing into review all the factors as would ensure a regular output from the raw material to the finished product.

The problem of an efficient plant lay-out must further embody within itself the question of locating stores, tools and raw materials, at most convenient places, so as to reduce the internal transport to its minimum. The location of the departments relating to the inspection, assembling and stocking of the finished products and their dispatch are other important factors which would need to be carefully considered in determining upon an efficient plant lay-out.

Q. 209. What do you understand by "Departmentalisation" of a factory? Enumerate its advantages.

A. Departmentalisation means the division and classification of an industrial enterprise into several distinct departments or sections, productive as well as non-productive, with due regard to the nature of the business, to help towards its organised efficiency and to facilitate the execution of the work assigned to the functional heads.

It is only by clearly defining and limiting the function and scope of each department and its proper division and sub-division that definite responsibility can be fixed, the efficiency of each can be measured, and the departmental budgets can be accurately drawn up. By the division of a large enterprise into well arranged sections, true departmental costs can be obtained, the required personnel for each department can be fairly determined, and the whole of the activities of the organised unit can be brought under measurable control.

The main advantages of Departmentalisation may be summarised as under:

(1) It ensures an adequate care and supervision of each activity of the business;
(2) It permits of a more logical selection of personnel, division of labour and specialization of tasks;
(3) It renders easy a definite assignment of duty, responsibility and authority;
(4) It facilitates a more efficient lay-out and flow of production and helps establish operating standards;
(5) It assists in accurate drawing up of departmental budgets;
(6) It helps towards collection and classification of information for costing purposes;
(7) It enables comparisons of actual performances of each department with the predetermined estimates;
(8) It ensures more economic results of the whole of the activities of the business by securing an uninterrupted flow of work under organised supervision and control; and
(9) It serves as a vital means of measuring efficiency from period to period.

Q. 210. Define and state the essentials of a Production Order.

A. Production Order or Works Order is a vital means of securing control over production and of ascertaining the cost of each separate unit by a proper distribution of the expenditure in material, wages and oncost incidental to each definite quantity of production. It consists of written instructions to the factory detailing a particular piece of work to be put in hand. Each such Order has a number allotted to it, and the relative job or group of products is then known by that same number.

Ordinarily, a Production Order is prepared and issued by the Planning Department authorising the commencement of the work described therein, containing the date of order, serial number, and specifying the date by which it should be completed. The allotment of numbers to the jobs or orders not only helps towards the ascertainment of the cost of the products as they pass through the various departments of the factory, but also facilitates the tracing of the jobs or products through the different stages of production.

As verbal orders are highly unsatisfactory, it is always desirable that every Production Order, however small, should be in writing. An equally essential point is that the instructions should be clear and definite so as not to leave any chance for misunderstanding. It is very evident that if any essential instruction is omitted, or the order is worked on wrong lines due to the instructions being not clear, a wastage might arise due to the production being faulty. On completion of the order, the date when finished should be entered thereon.

Where the product consists of several components, a main Production Order is issued specifying the type of product and the quantity required, and is accompanied by Sub-Production Orders for each component part.

Works Orders are Production Orders issued with a view to execute orders received from customers. They are known as **Stock Orders** when any production work is performed for stock purposes. They are called **Standing Orders** or **Works Expense Orders,** or **Service Orders,** when the work relates to the fulfilment of any repairs or other auxiliary service.

As each Works Order is identified by a distinguishing number, all Instruction Sheets and Materials Specifications in respect of it would bear the same number. Further, all Requisitions for issue of materials and all Wage Tickets or Job Cards recording the time spent and wages paid in respect of each Order, as also all records and references to its progress, will carry the same number for purposes of identification and entry of cost elements to right accounts.

Q. 211. What are the functions of the Design Department ? State under whose supervision the Department would function.

A. Proper designing is one of the chief functions of works management. It is the efficient designing and skilled workmanship that count for more than anything else in the highly competitive markets of today. In view of securing economy in costs, the main activities of the Design Department should be devoted to evolving a most serviceable and attractive product and yet one as would call for most economical manufacturing processes and would prove a commercial success.

The main functions of the Design Department would involve:

(1) A detailed knowledge of—
  (*a*) the components of the product with due regard to the capacity of the available man-power so as to secure ready and cheap performance,
  (*b*) the various uses to which the product may be put,
  (*c*) the nature and quality of the materials to be used, and
  (*d*) the plant, tools and other equipment available at the works;
(2) Whole-hearted co-operation with the Planning, Purchasing, Estimating, Engineering, Inspection, Costs, Sales and Research and Development Departments;
(3) Preparation of Working Drawings with full information, specifications and assembly lists to facilitate production;
(4) Proper classification of drawings and giving them numerical symbols for identification and ease of reference;
(5) Inculcating a cost-reduction sense by simplification, standardisation and interchangeability of components;
(6) Securing elasticity of design as would permit of easy changes for purposes of more economic methods;
(7) Maintenance of complete records of all original designs and any subsequent modifications therein;
(8) Avoidance of any unnecessary intricate designs to enable easy marketability of the products under highly competitive conditions;
(9) Continuous efforts towards new ideas, new patterns, new designs and improvements of existing lines with a view to launch new products upon the market; and
(10) Maintaining a close watch on more profitable lines with a commercial viewpoint.

The Designs, Drawings and Specification Sections usually work under the supervision and guidance of the Planning Department.

Q. 212. Give a broad outline of the steps that the Progress Department of a large Engineering Works would take to ensure punctuality in delivery and prompt execution of several types of products consisting of numerous parts.

A. To enable the several orders on hand to be executed within the times promised for deliveries, the Progress Department would first obtain from the Drawing Office or Planning Department a complete list and specification of every part which enters into each product, and the number of parts required.

The Progress Department must also have reliable data about every operation necessary to complete each part, together with the time required to perform each such operation, the capacities of the various machines to be used under the required speeds, feeds, depths of cut, etc. Where the time required for any operation is not known, the same will have to be carefully calculated with due regard to past experience.

The Progress Department, with a full knowledge of the requirements of the Sales Department and the delivery dates, will set itself to plan a production programme and prepare charts to cover every individual product with its relative components, with a view to ensure smooth and unhindered productive activities.

The Buying Office, in consultation with the Stores Department, will be immediately informed regarding the quantities of materials required together with the dates within which deliveries should be received, so that the necessary Purchase Orders may be placed with the suppliers.

Each productive section would be advised well in advance as to the quantity and quality of work required from it, and will be supplied with the relative drawings, specifications and delivery dates. The progress-chaser of each section would also be advised accordingly.

The Progress Department would keep in close and constant touch with the progress-chasers in order to keep itself well informed as to how the various sections of the work are progressing, and make sure that no component or unit is left behind the schedule.

It needs to be pointed out that in calculating the time required for each operation and completion of each product, due allowance will have to be made for scrapped work, breakdowns, transport between operations, the time taken for the process of sub-assembly and the final assembly of the unit by connecting up a number of complete parts.

The Progress Department will also act in close co-operation with the Tools Section to ensure that all Tools required are in readiness, and to place orders for any special tools, if needed.

By utilising the machines, man-power and the existing equipment and other mechanical facilities to best advantage, by distributing the work in the manner best calculated to derive the maximum results, and by securing a willing co-operation from the other sections of the factory, the Progress Department in close consultation with the Planning Department must be able to successfully cope with the demand made upon it.

✓**Q. 213. Discuss the different courses open to a manufacturer to enable him to cope with an extraordinary demand for his products entailing much increased production.**

A. Where a manufacturing concern cannot cope with an extraordinary demand for its products, it has to resort to any one of the following alternatives:

(*a*) To enlarge its factory so as to give increased production;

(*b*) To get some products manufactured elsewhere for purposes of resale;

(*c*) To work longer hours, either by overtime, or two or three shifts; or

(*d*) To speed up production so as to get more output during the usual working hours, by means of bonus or premium system of remuneration.

(*a*) Factory extension should be undertaken only after a most careful consideration of the question as to whether this extraordinary demand for the firm's products is likely to last for a reasonable length of time, as such a plan will involve an additional outlay of capital coupled with increased " fixed " overhead charges.

The minimum time necessary to carry out the project will also be an important factor to be considered in view of the urgent need for increased production.

If the demand for the product should subsequently decline, the additional assets may be lying idle with the extra burden of overheads still running up. The capital locked up will not be available for other uses, and might, if raised on loan, involve a heavy interest charge.

In any case, if it is desired to proceed with the plan for extension, it would be highly advantageous to utilise such an occasion in overhauling the existing departments and introducing more improved plant, processes and methods of work so as to increase the productive efficiency of the entire works.

(*b*) In this case, the concern will stand to lose the whole of the manufacturing profit on the additional products by having them made outside.

(*c*) The working of longer hours by overtime or night shift, although not involving additional outlay of capital, will entail increased expenses by way of repairs due to machines running longer hours, extra wages on account of overtime or night work, extra power, depreciation and additional supervision, and lighting charges; these, however, would be offset by the "fixed charges" being distributed over a larger output.

The disadvantages of working by overtime, or two or three shifts, may be enumerated as under:

(1) The quantity and quality of the work may suffer due to the work being carried on under night-work conditions;

(2) Spoilage of materials and damage of tools and implements due to rough use may also arise from the same reason;

(3) Efficiency of supervision and management conditions may not be same as during day work; and

(4) Machinery and equipment must deteriorate earlier.

(*d*) Under properly organised management and supervision, and the bonus or premium rates 'being based on accurate and reliable data, this method must result in greater output from increased skill and speed of the workers and less waste of time. The additional fluctuating indirect charges will be more than compensated as they will not be in the same proportion as the increase in production.

Before arriving at any decision, it would thus become necessary to weigh carefully the advantages and disadvantages attendant upon any one of the above courses to be followed.

Q. 214. Enumerate the losses resulting from Industrial Accidents, and give suggestions as to how such accidents can be minimised.

A. The losses due to accidents in factories may be summarised as under:

(1) Insurance payments for workmen's compensation and for protection of plant and machinery from accident damage;

(2) Increase in labour turnover due to absenteeism on account of loss of limbs, disfigurement or even death of workers;

(3) Loss of output due to stoppage of work; and

(4) Temporary disorganisation of the works routine resulting in defective output.

Industrial accidents result either from (*a*) Mechanical breakdowns; (*b*) lack of precautionary measures or training in safeguarding against accidents; (*c*) fatigue due to overwork, mental irritability or worry on the part of the workers; (*d*) poor working environments such as unsuitable temperature, bad lighting or ventilation, etc., or (*e*) carelessness.

The following measures may be suggested in order to minimise such losses:

(1) Providing adequate guards and safety devices on machines at danger points;

(2) Providing protective appliances and enforcing the use of these;

(3) Seeing to the proper observance of safety rules, and preventing all unsafe and negligent practices by putting up warning notices at conspicuous positions;

(4) Appointing Safety Committees to determine the causes of all accidents and reporting upon them;

(5) Securing full co-operation of the foremen and the workers by a system of continual education in safety-first principles;

(6) A careful enquiry into the problems of fatigue and introduction of rest pauses in order to eliminate listlessness and inattention on the part of the workers;

(7) Proper attention to conditions of work, lighting, heating, ventilation, as also the health and general well-being of the workers; and

(8) Making the workers safety-conscious and inculcating in them a spirit of safety and caution by constantly impressing upon them the foolhardiness of unnecessary exposure to hazards as would endanger their own lives and possibly those of their fellow workers.

Q. 215. Give a brief outline of the usual activities of a Welfare Department.

A. The activities of a Welfare Department can be classified into—

(1) Work within the factory, and

(2) Work outside the factory.

(1) **Internal Functions** consist of proper supervision and maintenance of the following amenities:

(*a*) Protective Clothing for the workers and safety devices on machines;

(*b*) Bathing and washing facilities;

(*c*) Cloak-room arrangements;

(*d*) Proper ventilation, lighting, sanitation and cleanliness;

(*e*) Ambulance Room, First-aid Appliances and Free Medical Aid;

(*f*) Inquiries into and maintenance of adequate record of Sickness and Accidents;

(*g*) Canteen facilities (free, or at cost or less than cost);

(*h*) Voluntary general educational and technical training facilities;

(*i*) Supervision of working conditions in regard to adequacy of wages, reasonable working hours, rest periods, and rest rooms; and

(*j*) Provision for immediate attention to workers' grievances.

(2) **External Functions** would result in provision of—

(*a*) Proper Housing;

(*b*) Transportation facilities to and from works;

(*c*) Supervision and management of Sports Clubs;
(*d*) Medical aid or hospital treatment to sick employees;
(*e*) General recreation facilities;
(*f*) Provision for old age, infirmity or prolonged sickness by means of Provident Fund or Insurance Schemes;
(*g*) Thrift and saving schemes; and
(*h*) Co-operative Stores for the benefit of employees.

The whole of the above activities would generally be carried out by the head of the Welfare Department in consultation with the Welfare Committee on which the management and the workpeople may be equally represented.

Q. 216. Describe the advantages of a workable Welfare Scheme.

A. The various schemes and measures adopted in all modern industries to look after the health, contentment, training and well-being of the workers within and without the factory as would tend to their general upliftment in life so as to secure their whole-hearted co-operation and interest in work are commonly referred to as welfare work.

As the happiness of human beings depends considerably on the satisfaction of both their mental and physical requirements, it seems undeniably essential that the workers should always be kept well contented, if best is to be achieved from the labour force.

Amongst the advantages accruing from a workable Welfare Scheme may be mentioned:

(*a*) The creation of most cordial and harmonious relationships and team-spirit among all engaged in the fulfilment of a common objective;
(*b*) The maintenance of a healthy, contented and cheerful labour force;
(*c*) Increased output and reduced costs;
(*d*) Less spoilage of work;
(*e*) Attachment of the workpeople to the concern;
(*f*) Whole-hearted co-operation and a real desire of every individual to give of his best for the common good;
(*g*) Maintenance of sound discipline;
(*h*) Less sickness, less absenteeism and reduced labour turn-over.

Q. 217. Explain what you understand by the "Departmental Plan" of Organisation.

A. This is the earliest form of organisation and is sometimes referred to as the "Military" form of organisation. It divides the activities of the works into three main groups, viz., Production, Distribution and Finance.

Each of these groups is then again sub-divided into several departments or sections which are practically self-sufficient and are independently supervised and managed. The Production Work would thus be divided into several departments, each one being fully responsible for the manufacture of one or more products or operative processes. Each Departmental Head would be in sole control over his section with full authority to select his own labour and staff, and plan his own production, make his own purchases of raw materials, stores and tools, fix his own wages, maintain his own costs and other records, form his own standards of output, do his own investigational work, and in extreme cases, even effect his own sales. In fact, he will hold himself completely responsible for everything that is performed in his own department. He will no doubt be supported by engineers, foremen and other technicians, but the main control of his department will rest in his hands. The responsibilities of each departmental manager being thus clearly defined, each department works as a self-supporting unit.

The only advantage of this system lies in its effective co-ordination within each department and the fact that, since the entire management affecting the whole of its activities are in the hands of one individual, it must permit of quick decision and will be free from red-tapism. Highly satisfactory results, however, under this method, can be achieved only in a small-sized business where the scope of each activity runs within sufficiently narrow limits for one person to successfully handle the entire management.

The objections attaching to this scheme may be summed up as under:

(*a*) As the plan of production will be devised and the work within each department will be controlled according to the views and the will of its executive head, and as his entire attention will be fully taken up by the multifarious activities, the progress of the business must suffer, for he will hardly have left any time or energy to see to its improvement and expansion;

(*b*) The successful directing of industrial activities in a modern business of any magnitude must call for so much specialised knowledge, skill and experience that it is impossible for any one individual to be an expert in the functioning of the numerous activities involved. Plant equipment, designing, arranging machine and tool lay-out, setting time- and piece-rates, devising methods of operation, testing the efficiency of processes, acting as shop disciplinarian and controlling and supervising buying, labour conditions, etc., are a few of the problems he will have to face, and it is not possible for him to be able to successfully tackle them all at the same time;

(*c*) As the business grows, the departmental head will neither find the time nor the opportunity for research and other analytical work, which is so very important for securing greater efficiency and economy in production. It is not possible for him to efficiently conduct and effectively cope with every activity in his department. He cannot think, plan, and analyse conditions for the betterment of the business simultaneously while performing his tasks of production and distribution;

(*d*) As the success of each department must depend upon the ability of the one person administering and controlling that department, and as different methods of work might exist in different departments, the business must suffer from waste and inefficiency of working conditions arising from lack of co-ordination; and

(*e*) Duplication of work must necessarily result from conflicting policies that might obtain in different departments due to lack of uniformity of efforts.

From the above, it is clear that an undertaking organised on "Departmental" lines has not many chances of successful expansion beyond very narrow limits.

Q. 218. What is "Functional Plan" of Organisation ?

A. The limited scope of working to which the Departmental Plan is liable has given rise to another type of organisation known as the Functional Plan. The Functional Plan recognises the fact that in a large-scale industrial enterprise of today, the functions of directing and controlling the business are so multifarious and each one of them has developed to such a complex degree, that it is not possible for any one leader, however skilful, experienced and qualified he may be, to successfully cope with all of them. It, therefore, divides the responsibility according to the functions to be performed, and not in departments or sections of the works. Thus, whereas under the Departmental Plan, the Departmental Head is responsible for all the functions of the department or section in his control, under the Functional Plan, the Functional Head concentrates the whole of his efforts on one particular function or aspect of activity irrespective of the departments or sections of the works. In the Functional Scheme, one executive will be in charge of the labour department, another one will control the buying, a third one will supervise and control productive function, a fourth one will attend to efficient costing, a fifth one will exert his efforts towards sales publicity and distribution, and yet another one will control finance, and so on. Each individual executive, being thus placed in full control of a function and by virtue of his total efforts being exercised in one direction, becomes a highly skilled specialist in his own field. He will thus be able to look after its working with greater ability, confidence and technical skill than the manager under the Departmental Scheme, who has to organise and control all the functions and activities pertaining to his department.

Further, this scheme will present ample scope for the growth and development of business, for despite its expansion even to any considerable extent, each functional head will still be able to attend to and control the one activity for which he is responsible. With the growth of the business, the volume of work for each functional executive will undoubtedly increase, but there will be no dislocation of organisation. Thus, the labour executive will still attend to his labour problems, and the buyer will attend to his buying, whereas the research and experimental head will continue with his work, however much the business expands.

The Functional System, however, has its setbacks, and the objections generally raised against it are, firstly, that it opens up opportunities for evading responsibility, and secondly, that it may lack in co-ordination and correlation of efforts, and the best may not be achieved. Another disadvantage of the Functional Plan is that the simultaneous existence of several superior executives of equal rank might tend towards conflict of authority and weaken the discipline and team-spirit so very essential for the smooth working of any extensive business.

It is only when all the functional activities are closely interlinked and co-ordinated as to focus the results towards the final objective, and when all the functional heads are fully imbued with the spirit of whole-hearted co-operation and goodwill in order to achieve the best from men and machines, that the Functional Plan can succeed.

In order to enable each function to co-ordinate closely with other functions, committees are often set up in some businesses, and these are composed of representatives of intimately associated functions. Problems vitally affecting the efficiency of the concern are brought before their meetings and, as a result of interchange of ideas, any deficiencies in the functional organisation as experience might bring to light are freely discussed and adjusted to mutual advantage. However, being cumbersome and expensive, the system can be advantageously used only in large-scale industries.

Q. 219. State clearly how the " Staff-and-Line " Plan of Organisation differs from the " Functional " and the " Departmental " Plans.

A. Out of the above two systems, there has evolved a third one which assimilates the features of both. It is known as the Staff-and-Line Plan of Organisation. It avoids the faults and embodies the best points of each of the above two types. Its principal feature is that it draws a rigid line between direction on the one hand, and the execution of the work on the other. The " Staff " comprises the directing, standardising, analysing, and advising part of the efforts, whereas the " Line " represents the actual performance of the tasks. The " Staff " does the all-important work of constructive and analytical inquiry and thought, and points out the road to efficient and economic performance. The "Staff" holds itself responsible for efficiency of equipment and quality of material, maintains cost and other analytical records and comparative statistics, conducts time-study of outputs, fixes piece-rates, devises economical methods of operation, designs production to suit the markets, and helps towards finding suitable markets.

The "Line" may be organised and worked on the "Departmental" system with this difference, that whereas the staff after close analytical comparison and research would suggest certain standard methods of operation, standard processes, standard outputs, select class and quality of material, and even enter into the activities of marketing the products, the executive in charge of each Department or Section would concentrate his entire skill and efforts towards the manufacturing processes, and execute the tasks as set out, organised and directed by the Staff.

By a division of activities in this manner, the departmental manager, being relieved of his duties in relation to research, selection of material and labour, methods of operation, marketing function and numerous other activities, must naturally find more time to attend to the effective execution of the work. This must help considerably towards high efficiency and lead to a systematic growth and expansion of the business. The "Staff and Line" scheme is thus in reality an inter-locking and assimilation of the good points of the Departmental as also the Functional System.

The whole idea of this method is that the specialised work in connection with analysis, research, labour, standardising, costing, material, equipment, etc., should be left to experts who can bring their special aptitude and knowledge to bear on the highly technical questions involved, so as to leave the departmental managers free to organise, control and supervise the productive activities.

Sometimes, the staff work is conducted chiefly through the medium of experts with the help of committees formed for different purposes such as Research Committee, Tools Committee, Production Committee, Labour Committee, etc. The executive head or foreman of each department is also included in such committees, the members of which meet at regular intervals to discuss more economical and efficient ways and means of effectively carrying out the objectives. The plans and suggestions as emanating from such committees are then placed before the Works Manager, who, on securing the final approval of the General Manager or the Managing Director, will put these into effect. The whole of the responsibility and authority is thus focussed on the General Manager or the Managing Director, who, assisted by the committees and experts possessing high technical skill and ability, controls the entire administration.

The committees are merely advisory and supplementary to the Line and are not supposed to supersede the management whose duty it would be to manage the whole of the production efforts. The committees being composed of production engineers, foremen, technicians and designers from different departments or shops will simply deliberate, discuss and suggest, while it will be left to the management to decide and act.

Q. 220. Give an exhaustive outline of the Duties and Responsibilities of those in management of an Industrial Enterprise.

A. For the attainment of high efficiency and economy, a modern Industrial Concern entails the following duties and responsibilities on those in management:

(1) Division and sub-division of the works into distinct departments and the fixing up of authority and limitations of activities, as also the duties, responsibilities and inter-relations of each department with the other;

(2) Development of highly efficient plant lay-out and equipment of each department with due provision for expansion and any modifications of existing arrangements, and establishment of most simple and economic methods of production;

(3) Organising the managerial and supervisory functions after a careful and exhaustive study of the policies and programmes as established by the administration;

(4) Engaging highly experienced and duly qualified executives and subordinates, placing them in appropriate positions, judiciously dividing their duties and responsibilities, and vesting authority in the right individuals in order that the numerous tasks may be carried out by the right men, by the right methods and in the right time;

(5) Regulating and maintaining strict executive control and inter-linking the managerial, manufacturing and marketing activities with a view to achieve better accomplishment and greater economy in performance;

(6) Regulating internal transport, material, tools and stores movement, routeing of operations and processes, and closely inter-weaving all the multifarious productive and non-productive activities into one harmonious unit as would ensure most effective, smooth and economic working;

(7) Collection and codification of data relating to product, machinery and personnel, and acquisition of a thorough knowledge of the plant and personnel to eliminate wastage and incompetence;

(8) Development of a system for planning production work ahead;

(9) Standardisation and simplification of machines, productive processes, operating methods, tools and equipment, as also of the classification and analytical record of materials, wages and overheads;

(10) Providing efficient systems of training for executives and subordinates desiring for advancement and progress, as also for workers anxious to fit themselves for better positions and for jobs calling for higher skill and alertness;

(11) Determining by psychological and trade tests the vocation or task for which any particular individual is naturally fitted so as to utilise his innate aptitude and intelligence to best advantage, and placing the most suitable workers for specified jobs in order to avoid misfits and the resulting inefficiencies;

(12) Ensuring a systematic classification and division of wage-earners into distinct groups, and introducing systems of fair and adequate wage bearing direct relation to individual output and workmanship, in order to induce whole-hearted efforts;

(13) Introduction and development of a sound system of budgetary control so as to ensure a rigid supervision and check on all sections of the works by constant comparisons of the amounts actually expended with the budgeted figures;

(14) Constant study of the product, and continuous development and improvement of the production technique, plant, tools and equipment through experiment and research to permit of the work being done with greater ease and efficiency;

(15) Introduction and development of job analysis through time and motion studies, and judicious allocation of machines, processes and jobs amongst operatives so that the jobs, men and machines may be fitted suitably together;

(16) Development of the production order and the routeing and scheduling systems as would follow up and control work-in-progress;

(17) Introduction of proper methods of recruitment and selection of skilled workers, and installation of fair and impartial promotional schemes for the personnel;

(18) Organisation and control of an effective system of prompt and accurate analytical statistics, returns, reports, charts or graphs in relation to the vast and varied activities of the factory, and establishment of a system of careful periodical examination and study thereof to ascertain how far the results achieved compare with the predetermined programmes;

(19) Ensuring effective control by a system of inspection and checking of all purchases of raw materials, stores, tools, work-in-progress, spare parts and finished products, and seeing to their proper storage;

(20) Prevention of all wastage and leakages of materials, stores and tools by prompt and accurate records of the incomings and issues thereout,

and a sound system of checking of the quantities on hand by means of perpetual inventories;

(21) Organisation and development of suitable systems of cost and financial accounting;

(22) Organisation and development of a prompt and reliable system of collection, analysis, codification and allocation of cost data relating to production and auxiliary services;

(23) Maintaining the whole of the equipment in plant, machinery and tools in a high state of efficiency, and keeping a complete and classified record of these;

(24) Maintaining a highly efficient sales organisation based on an accurate knowledge of market conditions, and seeing to economic distribution of products to customers;

(25) Arranging reasonable hours of work and instituting suitable rest pauses between each working spell, with due regard to the nature of the work, to prevent over-strain and enable the worker to recuperate lost energy;

(26) Determination of the proper amount of time which each piece of work, operation or process should take an average workman or a group of workers to complete under certain stated conditions by means of time studies or record of past work, to help towards equitable rate-fixing, estimating, and planning production work in advance;

(27) Institution of adequate provision of financial and other incentives as would conduce to willing and effective work on the part of all employees;

(28) Securing most satisfactory and comfortable conditions of work, providing proper lighting, ventilation and temperature with free outlet of gases, fumes and dirt within the work-rooms, and removing all adverse factors which would lead to excessive fatigue and boredom, poor performance and early deterioration of the worker's health;

(29) Detection and elimination of all incompetence and inefficiency by an analytical record of time and performance of each individual or a group of men, as also of the comparative periodical output and its relative cost of each section or department;

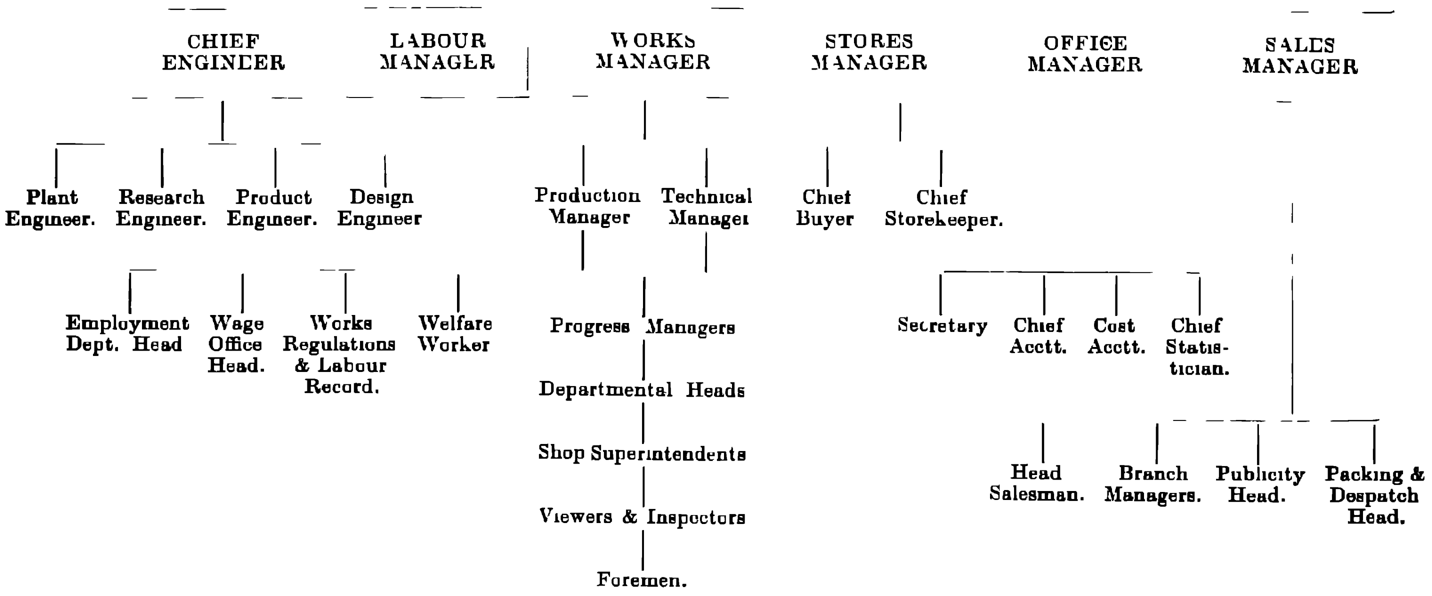
(30) Eliminating or reducing factors tending to industrial accidents; and

(31) Strict enforcement of the Works Rules and Regulations, Directions, and Instructions, and maintenance of most rigid discipline tinged with sympathy and just and even treatment to all.

Q. 221. Give a specimen managerial Diagram indicating the usual division of work and responsibility in a large-sized Manufacturing Concern.

A. MANAGEMENT DIAGRAM

The following diagram will indicate the usual division of work and delegation of responsibility in the Managerial Organisation:



✓**Q. 222. What do you understand by Simplification and Standardisation, and how would they help towards economy in costs of production and management ?**

A. In industry, Simplification is the process of determining a limited number of types, sizes, varieties and grades of articles for production with the object of better control and elimination of waste resulting in ultimate economy and ease in manufacture. It not only eliminates unnecessary variety of products, but also seeks to minimize non-essential differences in products. It thus strives towards interchangeable production by so designing the different products that some common parts identical in their dimensions may fit accurately into a variety of commodities without least disturbance to their individual attractiveness or serviceability. While seeking to reduce the types, sizes and characteristics of products for manufacture within a well-defined variety, it will base its selection on most favourable lines with due regard to their commercial demand and success. A close concentration on a limited variety of articles with the additional advantage of interchangeability of parts would bring in its trend efficiency in productive processes, supervisory control and economy in costs.

Standardisation means setting up definite standards whereby the serviceable value in quality and quantity of equipment, material, labour, processes for operation, methods of work and records of performance can be gauged and measured. It aims at simplification and economy by adopting as a pattern modes of procedure, performance and control known to be most practicable and effective, and capable of being measured in terms of comparable units so as to help detect and eliminate operating inefficiency. It selects the best products, determines the best available material, the best designs, the most appropriate machines and tools, and devises the best operating processes and methods of work known from experience and other reliable data, and then strictly adheres to these till something more efficient and more economic is found. It does not, however, stultify progress and improvement by rigidly fixing anything that is unchangeable, as is the common conception, but stimulates development by striving to simplify and improve upon existing equipment, modes of operation and methods of accomplishment of each task by persistent study, research and experiment.

The processes of simplification and standardisation are closely inter-related and possess a common objective in view, as both are out to achieve effective and economic performance.

They have proved to be of immense value towards the attainment of managerial efficiency in these days of keen struggle for superiority and ever-increasing consumer's demand for better quality and lower prices.

The principles of Simplification and Standardisation may be applied not only to technical processes and functions, but also to managerial and financial activities and procedures with considerable advantages. Their application to technical activities would be in relation to choice of material, design and quality of product or task, selection and training of labour, time and rate-setting, method of job performance and control of output. They would further relate to the selection of machines, tools, processes and operations, types and sizes of the products, dimensions and weights of components, inspection, tests, and other productive functions. Such technical standards would help immensely in the supervision and control of departmental functioning with the ultimate economy in costs as the objective.

Standardisation when applied to the varied activities of the managerial and financial sections, such as supervision, budgeting, purchasing and storing of materials and tools, time and performance records, wage computation and analysis, classification and analysis of overheads, costing forms and statistical graphs and records, as also financial records and statements, and the maintenance of proper systems and methods of performing all routine work will insure greater control over the functioning of the entire organisation by simplifying the process of administration, and will tend to economise the cost of management by detecting and eliminating all wastes of material, time and efforts.

Standards in order to be serviceable must be based on accurate facts, dependable knowledge and scientific data. They must be simple, comprehensive and flexible so as to be capable of adaptation to changing conditions in business. If intelligently formulated and systematically and judiciously followed, they will simplify production by procuring uniformity of products, processes and methods. They will promote and control managerial co-ordination and supervision by establishing definite measurable standards of planning and performance and by providing comparative basis for analysis of conditions of a vast variety of work and results. They will help establish a valuable check on the purchases, storing and issue of materials, facilitate sound and reliable account-keeping and costing records, insure effective management, and promote cost reduction and control.

✓**Q. 223. Explain how far the problem of Internal Transport would affect the efficiency of a factory.**

A. As a result of a large number of modern industrial undertakings occupying extensive areas and the processes of manufacture having become more numerous, it is evident that the factor of Internal Transport must play a vital part in influencing production efficiency by securing easy flow of work from process to process. As one of the objects of production efficiency would be to reduce the time the product takes to pass through all the stages of manufacture, any defective, inadequate or antiquated system of Internal Transport must cause delays and hinder production capacity. No scheme of works organisation would, therefore, be effective and complete without an efficient system of Internal Transport.

Internal Transport arrangements and the methods of handling material and equipment must be most carefully considered in all their details at the very inception along with the lay-out of the factory, the disposition of the machines and the work-places with due regard to the future development of the works, as they will influence to some extent the design and construction of the works building. The whole factory lay-out must be so planned as would reduce the handling and internal movements of commodities to a minimum by providing successive operations or processes close to each other, as no amount of mechanical handling equipment, however efficient, can subsequently correct a poor lay-out.

No specific system in regard to appliances to be installed can be suggested as so much would depend on the structure of the factory buildings, the size of the undertaking, the class of industry and the methods of manufacture in use. In any case, the system of internal transit should not be unnecessarily elaborate, but should be least expensive and commensurate with the needs of the business so as to give most satisfactory service.

An enormous advance has been made during recent years in the handling of material by mechanical means, and this has contributed largely towards saving of time and labour. The selection of equipment must, however, depend on the nature of the material and product handled, the sequence of the processes and the location of the testing and assembly departments. The problem of installing any system of internal transport must necessarily be considered in conjunction with the shop lay-out and the system of inspection in force so as to reduce handling and transit as much as possible. Thus, much will depend on in what part of the factory the inspection section is located and whether the inspection of each process or part is carried out in the production section itself, or whether the goods pass from one section to inspection and from inspection to another section.

While instituting a system of internal transport, its increasing demands with the expansion of works should be borne in mind. In other words, the transport organisation should be elastic and capable of adjustment as to cope with the increasing needs of the business. The system should provide a continuous link of service to all the departments in their natural sequence so as to ensure a smooth, speedy and regular passage of all goods to and from the departments with least wastage of time and efforts.

Q. 224. What are Works Conferences and Committees, and what part do they play in Works Organisation ?

A. To serve a higher degree of effectiveness in the actual working out of all kinds of manufacturing problems, a system usually followed in large organisations is to appoint a Committee of the key-men in each particular type of work to enable judicious decisions to be obtained on plans of action.

There would thus be committees for Finance, Purchase Control, Standards of Performance, Production Control, Labour Control, Budgetary Control, Cost and Stores Control, etc. Such Committees have proved greatly helpful in enabling the higher executives and subordinates to meet on common ground and exchange views on matters most vitally affecting the general conduct of the business. The concern is thus enabled to obtain expert opinion from a body of men who have specialised in their respective functions and who can judge better with their full knowledge of the machines and man-power capacity as also the manufacturing techniques and methods of performance of the organisation.

Similarly, in order to enlist the confidence of the workers in the good intentions of the management and to present an opportunity for constructive co-operation between the management and the men in matters directly affecting the workers, a system that has proved highly successful is to carry out all the activities in relation to labour by means of Works Committees consisting of executives and the representatives chosen by the workers from the different sections of the works. There will thus be committees for piece-rates and wage-systems, shop regulations, grievances and discipline, working conditions and hygiene, training and promotion, welfare measures, and the like matters. The constitution and powers of such committees must, of course, vary in different factories, but the management and labour being equally represented thereon, they will serve a most useful purpose in improving the working relationships and bringing about healthy co-operation by avoiding friction and antagonism. They would enable those in management to place before the employees candid and complete explanations of the projects, purposes and policies of the undertaking, arouse their real interest and inculcate group-sense by winning their confidence and respect. To the workers, they will offer opportunities for free interchange of views, expression of opinions, presentation of facts and disclosure of grievances and of proposals for their redress, and thus prepare ground for mutual trust and sympathetic understanding so very essential to the smooth running of any large enterprise. They will further enable the workers to understand the realities of the situation as also the responsibilities and the viewpoints of the management, and thus pave way for clearing up all doubts and suspicions. This is a measure which needs to be instituted without hesitation in all our works as it will prove considerably helpful in bringing the workers' genuine grievances right to the surface, clearing up existing misunderstandings before they take serious proportions, and thus prevent the spread of factory discontent.

Q. 225. Explain why a sound workable Welfare Scheme is essential to the smooth working of a factory.

A. Experience has proved that benevolent efforts on the part of industrial heads in concerns of enormous magnitude to bring about the intellectual and social upliftment of their workers have without exception resulted in larger production and improved quality of workmanship. As a result of psychological researches, the industrial countries of the other Continents have all accepted the vital need of creating and maintaining most comfortable and cheerful working conditions within the factory and most congenial surroundings without it, in order to bring about the contentment, health and general welfare of their employees. Industrial Welfare work has thus been recognised as an indispensable adjunct to any ideal organisation in modern days.

There can be little doubt that a certain degree of human sympathy bestowed on our workpeople in helping them to work under pleasant and comfortable surroundings and improve their general mode of life will turn them into more efficient workers. It will enable them to sustain the fatigue from their intense toil, and will serve to alleviate the mental friction and irritability to which they are easily liable due to monotony of work. If our workers are made to realise that their own welfare is inseparably linked with the welfare of the business, they will cheerfully respond to such human treatment by giving their whole-hearted efforts in the same manner as machinery well cared for and kept in a state of high efficiency would give excellent results. Thus, Labour Welfare, if well directed and effectively controlled, will change the entire outlook and atmosphere of our industrial pursuits.

Welfare work, if carried out in a spirit of sympathy, fairness and mutual compromise and respect, will weld the employer-employee relations into a potential and peaceful entity. From what has been stated above, it must be clear that there is an enormous scope in improving the living conditions of the employees both inside and outside the factory, and if our welfare workers can achieve the objective, they will be rendering an inestimable boon to humanity and a service of immense industrial value to their country.

✓**Q. 226. Describe to what extent Industrial Psychology has contributed to the present high pitch of efficiency in Industrial Enterprises.**

A. It has been indisputably established that Industrial Psychology has rendered invaluable services to industry in the following directions:

(1) The selection of workers based on vocational and psychological tests whereby each individual may be engaged on the type of work he is best fitted for;

(2) Ensuring contentment and well-being of work-people by the introduction of better working conditions and other incentives;

(3) Institution of more logical methods of doing work resulting in securing of greatest efficiency with the least possible efforts;

(4) Better utilisation of human energy by the elimination or diminution of fatigue;

(5) Introduction of time- and labour-saving devices;
(6) The prevention or diminution of industrial accidents; and
(7) The furtherance of certain commercial activities, like market research, salesmanship and advertising.

A study of Industrial Psychology would embrace the following :

Vocational tests in selection and training of new employees and apprentices.
Incentives to workers.
Working conditions—harmonius relations—contentment—sanitation, health and general well-being of employees.
Reduction of fatigue—monotony of work—hours of work—rest-pauses—avoidance of noise.
Scientific time and movement studies.
Lighting, heating and ventilation of factories.
Internal transport and economic handling of materials, stores and implements.
Avoidance of time and material wastage.
Utilisation of individual worker's innate aptitude and intelligence.
Safety of workers, and avoidance of accidents.
Happy employer-employee relations.

Q. 227. What do you understand by Vocational Guidance? Explain how such tests would help towards securing labour efficiency.

A. Vocational Guidance can today claim to be a factor of fundamental importance in any industrial system as it would tend to reduce a large number of inefficients in every phase of manufacturing and managerial activity. In the absence of the least guidance and well-directed advice as to the requisite qualifications and adaptability for the careers which they seek for themselves, our young men are apt to change their vocational pursuits several times in early life, which must lead to reduced efficiency on their part and mean economic loss to the community.

By the application of psychological methods for vocational guidance, a more careful selection of our young entrants into industry is sure to lead to a better and more logical direction of their energies in the right channels, and avoid the considerable wastage that arises from maladjustment in unsuitable occupations. It will prove a potent factor in the maintenance of social peace by preventing personal discontent and industrial unrest which are sure to follow when men are assigned jobs and placed in vocations for which they are most unsuited and for which they have least inclination or liking. It will result in greater contentment, better production, and higher national prosperity.

In the selection of skilled labour particularly, psychological tests serve a most useful purpose of distinguishing those who possess the requisite aptitude and skill for a particular type of work from those who do not possess the required fitness and capacity. These tests are designed to weed out those likely to be unsuitable and useless for any special piece of work, and to put the right worker in the right job.

Q. 228. State briefly the advantages of Mass Production.

A. The chief advantages of Mass Production may be summarised as follows :

(1) It simplifies purchase of materials in great quantities thereby securing better terms as to costs, discounts, and deliveries;

(2) It serves to reduce the rates of works and office oncosts per unit of output, as these would be spread over a larger quantity of products;

(3) It helps towards better transport service and special transport rates;

(4) It tends towards reduction in waste by better utilisation of by-products;

(5) It assists in simplifying and standardising of processes, machines and tools by the maintenance of uniform quality and interchangeability of parts;

(6) It enables research laboratories to be maintained for the purpose of achieving improvement in the firm's products, reduction in costs, and new fields of activity;

(7) It can command more elaborate and better directed sales promotion, and publicity;

(8) It brings competition under measurable control;

(9) With its impress of stability and financial strength, a large-scale enterprise can attract men with great business talent and high organising and administrative ability who would help the concern reach a high standard of attainment;

(10) Better amenities, incentives, working conditions and comforts can be provided for its employees as would secure contentment, and help towards attainment of highest pitch of efficiency; and

(11) Labour troubles can be negotiated and settled more easily due to its financial strength.

✓**Q. 229. Explain what you understand by the term "Routeing" in Production Organisation.**

A. The term Routeing means determining the most advantageous path of flow to be followed in the sequence of operations and processes from department to department and machine to machine till the material in raw state is converted into finished product.

The Route Clerk prepares a Route Chart or Route Sheet for every production order showing the individual parts to be completed for each finished product before any group can be assembled.

It will contain the following details in full:

(1) The Works Order No. ;
(2) Number of pieces to be made;
(3) Symbol and classification of the part;
(4) The lot sizes for each unit of production, if put through in lots;
(5) List of operations for each part;
(6) Definite sequence of operations; and
(7) Machine to be used for each operation.

A separate Route Sheet is necessary for each part or component of a Works Order.

It is not necessary that the number of pieces mentioned on the Route Sheet should be the same as required under any specified order. In many cases some allowance has to be made for spoilage, and additional pieces may be needed for stock or as reserves for repairs, or as spares.

√**Q. 230. State clearly the function of "Scheduling" in any Production Programme.**

A. Scheduling means planning for each piece of work to be started and completed at a certain time. Where the production programme represents estimated stock or sales requirements of a variety of products each made up of several components, it is highly essential to fit each Works or Stock Order into a general time-table so that orders may be executed in due accordance with delivery promises, and that the requisite number of each part may reach the assembly-room in due order and at the scheduled time. Scheduling thus determines the time at which each operation or event in connection with manufacturing should take place.

Scheduling will not only help assign jobs to a given machine or process within each section or shop, but will also determine the total time required to perform a given piece of work or assembly. Scheduling is indispensably essential in a large works producing a variety of products with numerous components, where the assignment of dates within which products must be completed must form an important element in production control.

Time and Motion Study will help towards standardisation of time element and methods of work, after a careful analysis and due consideration of all the vital factors surrounding the manufacturing processes, such as the nature of the product, the lay-out of the plant, the quantity and quality desired, the type and characteristics of operations, personnel, machines, materials, tools and equipment available for work.

✓**Q. 231. What part does "Despatching" play in Production Routine?**

A. Despatching means the releasing of Production Orders and issuing of work and instructions to the shops in accordance with the times, places and sequences as listed on the Route Sheets and Schedule Charts.

It includes the releasing of material requisitions, the issuing of job tickets with the starting and finishing time of work recorded thereon and identification tickets for lot or order, and preparing assembly requisition form and move tickets to guide the handling of work in process.

The principal functions and activities of despatching are:

(1) To see that the right materials are moved from stores to machines, from operation to operation;
(2) Instructing Tools Department to see to the issue of the right tools, accessories and fixtures in time before the commencement of each operation;
(3) Issue of Production Orders authorising the work to be taken in hand in accordance with the predetermined dates and times;
(4) Distributing machine-loading and schedule charts, route sheets, operation instruction cards or sheets, and identification tags for each works order;
(5) Issuing Inspection Orders directing the type of inspection needed at various stages of production for Inspection Report; and
(6) Keeping a proper record of the various subsidiary orders issued with each Production Order, for filing and reference.

✓**Q. 232. State exhaustively how a good system of "Follow-up" helps materially towards maintenance of sound Production Control.**

A. No system of Production Control would be complete unless the various stages of Production Programme are carried out as scheduled. It would, therefore, be the duty of those engaged in follow-up work to make continuous observations of current happenings, maintain a detailed record thereof, and make prompt reports of any deviations as would be ascertained on comparisons of actual performances with the pre-arranged plans. The duties and responsibilities of the Follow-up section must relate to the following:

(1) Whether the Production Orders with full instructions and other subsidiary papers are received well in advance;

(2) Whether the requisite materials, tools and accessories are received in right time for various processes as planned;

(3) Whether the machine-loading programme is followed according to time, or whether there are any delays or stoppages due to breakdown or other reasons;

(4) Whether the work-in-process at various stages is of right quantity and quality;

(5) Whether any materials or tools supplied are faulty in any respect, or the work-in-process has failed to pass at any stage of inspection;

(6) Whether the time actually taken for each operation or unit of production compares favourably with the predetermined time allowances;

(7) Whether all Production Orders within each stated period, say week or month, are duly completed in time according to plan;

(8) Whether there have been any deviations from the set plan due to any emergency orders being given preference; and

(9) Whether men or machines had to be kept idle at any time.

From the above, it would be clear that the follow-up process helps ensure that the promise is backed by performance by regulating the progress of materials and parts through the production activities as pre-planned. It correlates the various separate and unrelated production functions into a unified whole. It collects, analyses and files all production data for the purpose of costing and other references. It reveals lost-time conditions arising from the idle time of men and machines, if any, so that the matter may be taken up for investigation. Finally, it looks into the variances from the predetermined time-schedules, and reports on all deviations from the set programme including the final completion, assembly and erection of products to serve as a control and guidance for future production planning. A good Follow-up system would thus help reveal errors in routeing or scheduling, as well as defects due to insufficient or inefficient materials, machines, man-power, methods and inspection, so that such deficiencies may be set right.

✓**Q. 233. State in detail what part Machine Loading plays in Production Control.**

A. A vital factor in the routeing and scheduling of work is Machine Loading, for with the information regarding the productive capacity of the machines, it would not be a difficult matter to determine the quantity of work that can be assigned to each machine. Further, with reliable data as to the time to be taken for completing each operation, the routeing should be so planned as to keep the machines continuously busy. Poor planning often results in some machines being left idle or some machines being over-loaded. Where the under-load results from insufficient orders on hand, a certain amount of stock manufacturing would need to be taken in hand.

In order to maintain a control over the activity of each machine, machine-loading charts or boards are displayed in each shop indicating the work now being done by each machine, the immediate scheduled job to follow, and the subsequent work allotted to that machine.

There would be Idle Machine Time Cards to record the idle time of each machine due either to breakdown, lack of job, lack of labour, material or tools.

PRACTICAL PROBLEMS

Q. 234.

The following figures relate to three jobs of a Manufacturing Business:

	Job No. 1	Job No. 2	Job No. 3
	Rs.	Rs.	Rs.
Direct Materials	600	800	1,000
Direct Labour	400	600	700
Chargeable Expenses	60	80	100

Works Oncost is 50% on Prime Cost, and Office Oncost 10% on Works Cost.

Find out the Total Cost of each job.

Answer:

	Job No. 1	Job No. 2	Job No. 3
	Rs.	Rs.	Rs.
Direct Materials	600	800	1,000
Direct Labour	400	600	700
Chargeable Expenses	60	80	100
Prime Cost =	1,060	1,480	1,800
Add: Works Oncost (50% on Prime Cost) =	530	740	900
Works Cost =	1,590	2,220	2,700
Add: Office Oncost (10% on Works Cost) =	159	222	270
Total Cost Rs.	1,749	2,442	2,970

Q. 235.

Calculate the total earnings and earning per hour of three operatives, under the Rowan Premium Bonus System from the following particulars:

The standard time for producing one dozen articles is 20 hours. The hourly rate of wages is Re. 1. The actual time taken was—A, 16 hours, B, 12 hours, and C, 10 hours.

Answer:

STATEMENT SHOWING THE TOTAL EARNINGS AND EARNINGS PER HOUR UNDER THE ROWAN PREMIUM BONUS SYSTEM

Operatives	Time taken	Time saved	Per cent of time saved	Wages earned	Bonus	Total payable	Rate earned per hour
	Hours	Hours		Rs. As. Ps.	Rs. As. Ps.	Rs. As. Ps.	Rs. As. Ps.
A	16	4	20%	16 0 0	3 3 2	19 3 2	1 3 2
B	12	8	40%	12 0 0	4 12 10	16 12 10	1 6 5
C	10	10	50%	10 0 0	5 0 0	15 0 0	1 8 0

Note.—Under this System, the Bonus bears the same percentage on the total wages as the percentage of the time saved bears to the time allotted

Q. 236.

From the undermentioned information, work out the total amount payable and the rate earned per hour, by three workmen under the Halsey Premium Bonus System, the Bonus being calculated at 50 per cent of the time saved:

Standard time for given operation: 10 hours.

Hourly rate of wages: Re. 1.

Actual time taken: A, 8 hours, B, 6 hours, C, 5 hours.

Answer:

Workmen	Time taken	Time saved	Wages earned	Bonus 50% of time saved	Total payable	Rate earned per hour
	Hours	Hours	Rs. As. Ps.	Rs. As. Ps.	Rs. As. Ps.	Rs. As. Ps.
A ..	8	2	8 0 0	1 0 0	9 0 0	1 2 0
B ..	6	4	6 0 0	2 0 0	8 0 0	1 5 4
C ..	5	5	5 0 0	2 8 0	7 8 0	1 8 0

Q. 237.

Two electric locomotives are purchased on the same day for Rs. 1,20,000. The cost of maintenance, including labour works out to Rs. 5,000 a year per locomotive. One is used on a contract, which terminates in three years and is then sold for Rs. 6,000, and the other is used in a Contractor's Yard.

Find out the amounts which should be recorded in the Costs and state into what category of expense would these fall. Calculate depreciation at the rate of 10% per annum.

Answer:

The locomotive on the contract is a Direct Charge to the Terminal Cost of the contract. The amount to be recovered as Direct Expense is:

	Rs.	Rs.
Purchase Value	60,000	
Less amount realised on sale ..	6,000	
		54,000
Maintenance, 3 years at Rs. 5,000 a year		15,000
	Rs.	69,000

The locomotive in the Contractor's Yard creates a charge against Material Handling. The expenses to be recovered are:

	Rs.
Maintenance	5,000
Depreciation	6,000
Rs.	11,000

1/12th of Rs. 11,000 per month should therefore be recovered through the Material Handling charges.

Q. 238.

From the following particulars you are required to prepare a statement showing (a) the cost of materials consumed, (b) Prime Cost, (c) Works Cost, (d) Total Cost, (e) the percentage of works oncost to productive wages, and (f) the percentage of general oncost to works cost:

	Rs.
Stock of Finished Goods, 31st December 1956 ..	72,800
Stock of Raw Materials, 31st December 1956 ..	33,280
Purchases of Raw Materials	7,59,200
Productive Wages	5,16,880
Sales of Finished Goods	15,39,200
Stock of Finished Goods, 31st December 1947 ..	78,000
Stock of Raw Materials, 31st December 1947 ..	35,360
Works Overhead Charges	1,29,220
Office and General Expenses	70,161

The Company is about to send a tender for a large plant. The Costing Department estimates that the materials required would cost Rs. 52,000 and the wages to workmen for making the plant would cost Rs. 31,200. The tender is to be made at a net profit of 20 per cent on the selling price. Show what the amount of the tender would be, if based on the above percentages.

Answer :

STATEMENT OF COST

	Rs.
RAW MATERIALS :	
Stock, 31st December 1956	33,280
Add : Purchases	7,59,200
	7,92,480
Less : Stock, 31st December 1957 .. 1947 ..	35,360
(*a*) Cost of materials consumed =	7,57,120
Add : Productive Wages ..	5,16,880
(b) Prime Cost .. .. =	12,74,000
Add : Works Overhead Charges ..	1,29,220
(c) Works Cost .. .. =	14,03,220
Add : Office and General Expenses	70,161
(*d*) Total Cost .. .. =	14,73,381
(*e*) Percentage of Works Oncost to Productive Wages work out at 25%	
(*f*) Percentage of General Oncost to Works Cost comes to 5%	

STATEMENT SHOWING THE AMOUNT OF TENDER

	Rs.
Materials consumed	52,000
Productive Wages	31,200
Prime Cost =	83,200
Works Oncost 25% of Productive Wages ..	7,800
Works Cost =	91,000
Office Oncost 5% of Works Cost	4,550
Total Cost =	95,550
Add: net profit being 20% on selling price, equivalent to 25% on Cost Price ..	23,888
Amount of Tender = Rs.	1,19,438

Q. 239.

From the following figures ascertain the
(*a*) cost of materials consumed,
(*b*) value of output of manufactured goods, and
(*c*) percentage of gross profit on sales.

TRADING ACCOUNT

		Rs.			Rs.
To Stock :	Rs.		By Sales		13,44,000
Finished Goods ..	1,28,000		,, Closing Stock :	Rs.	
Raw Materials ..	38,400		Finished Goods ..	1,12,000	
		1,66,400	Raw Materials ..	44,800	
,, Purchases		3,84,000			1,56,800
,, Wages		6,49,600			
,, Carriage		32,000			
,, Gross Profit		2,68,800			
	Rs.	15,00,800		Rs.	15,00,800

Answer :

(a) **Cost of Materials consumed:**

	Rs.
Opening Stock of Raw Materials ..	38,400
Add : Purchases	3,84,000
,, Carriage	32,000
	4,54,400
Less : Closing Stock of Raw Materials ..	44,800
Materials Consumed = Rs.	4,09,600

(b) **Value of Output of Manufactured Goods:**

Materials consumed (as above)	4,09,600
Wages	6,49,600
Value of output = Rs.	10,59,200

(c) **Percentage of Gross Profit on Sales:**

$$\frac{2,68,800 \times 100}{13,44,000} = 20\%$$

Q. 240.

You are required to ascertain from the following figures what percentages (a) the Manufacturing Cost, (b) the Selling Oncost, and (c) the Management Oncost bear to the Total Cost of the goods sold. You are further required to ascertain by what percentage the average Selling Price should be raised in order to double the Net Profit.

	Rs.
Opening Stock of Direct Materials	61,700
Work-in-Progress at commencement	1,21,700
Purchase of Direct Material	2,86,500
Direct Wages	3,57,000
Factory Oncost	1,99,500
Selling Oncost	70,000
Management Oncost (Applicable to goods sold) ..	1,10,000
Sales	12,50,000
Closing Stock of Direct Materials	75,400
Closing Work-in-Progress	1,35,600
Sales of Scrap	1,350
Carriage on Direct Material	5,950

There is no opening or closing stock of Finished Goods.

Answer :

STATEMENT SHOWING THE TOTAL COST

	Rs.	Rs.
Opening Stock	61,700	
Work-in-Progress at commencement ..	1,21,700	
Purchases of Direct Materials ..	2,86,500	
Direct Wages	3,57,000	
Carriage on Purchases	5,950	
		8,32,850
Less : Closing Stock	75,400	
Less : Work-in-Progress (balance at close)	1,35,600	
		2,11,000
		6,21,850
Less : Sale of Scrap		1,350
Prime Cost =		6,20,500
Add : Factory Oncost		1,99,500
Manufacturing Cost =		8,20,000
Add : Management Cost		1,10,000
Cost of Production =		9,30,000
Add : Selling Oncost		70,000
Total Cost =		10,00,000

(a) Manufacturing Cost is 82% of Total Cost.
(b) Selling Oncost is 7% of Total Cost.
(c) Management Oncost is 11% of Total Cost.

		Rs.
Sales	=	12,50,000
Less: Cost of Sales as above	=	10,00,000
Net Profit	= Rs.	2,50,000

Net Profit is 20% on Selling Price. Therefore, in order to double the Net Profit, the Selling Price should be increased by 20%.

Q. 241.

The accounts of the Novel Products Ltd., show for 1956:

	Rs.
Materials used	7,00,000
Direct Manual and Machine Labour Wages ..	5,40,000
Works Overhead Expenditure	1,62,000
Establishment and General Expenses	1,12,160

Show the Works Cost and the Total Cost of manufacture, the percentage that the Works Overhead Cost bears to the Manual and Machine Labour Wages, and the percentage that the Establishment and General Expenses bear to the Works Cost.

What price should the Company quote to manufacture a Refrigerator which, it is estimated, will require an expenditure of Rs. 720 in material, and Rs. 600 in wages, so that it will yield a profit of 15 per cent on the total cost?

Answer :

NOVEL PRODUCTS LTD.

Summary of Expenditure for the year ended 31st December 1956.

	Rs.
Material used	7,00,000
Manual and Machine Labour Wages	5,40,000
Prime Cost =	12,40,000
Works Overhead Expenses	1,62,000
Works Cost =	14,02,000
Establishment and General Expenses	1,12,160
Total Cost = Rs.	15,14,160

Works Overhead Cost works out at 30% of Manual and Machine Labour Wages.

Establishment and General Charges work out at 8% of the Works Cost.

Estimate for a Refrigerator

		Rs.
Materials		720
Direct Wages		600
	Prime Cost =	1,320
Works Oncost 30% of $\overset{600}{\text{Direct}}$ Wages		180
	Works Cost =	1,500
Office Cost—8% of Works Cost		120
	Total Cost =	1,620
Profit—15% on Total Cost		243
	Selling Price Rs.	1,863

Q. 242.

Write up Contract Account No. 200 from the following particulars:

	Rs.
Direct Materials	39,600
Wages	26,400
Special Plant	17,600
Stores Issued	7,040
Loose Tools	3,300
Cost of Tractor—	
Running Materials	2,200
Wages of Driver, etc.	3,520
Other Direct Charges	2,640

The Contract was completed in 13 weeks, at the end of which period Plant was returned subject to a depreciation of 15 per cent on the original cost. The values of Loose Tools and Stores returned were Rs. 2,200 and Rs. 890 respectively. The value of the Tractor was Rs. 20,000, and depreciation was to be charged to this contract at the rate of 15 per cent per annum.

You are required to provide for Administrative Expenses at the rate of 10 per cent on Total Works Cost.

Answer :

CONTRACT No. 200 ACCOUNT

		Rs.		Rs.
To Direct Materials		39,600	By Plant (value returned) ..	14,960
„ Wages		26,400		
„ Special Plant . ..		17,600	„ Loose Tools (value returned) ..	2,200
„ Stores Issued		7,040		
„ Loose Tools		3,300	„ Stores (value returned) ..	890
„ Cost of Tractor :—	Rs.			
Running Materials ..	2,200		„ Balance—being Net Works Cost c/d. ..	85,000
Wages of Driver ..	3,520			
		5,720		
„ Depreciation of Tractor:— 15% per annum on Rs. 20,000 for 13 weeks		750		
„ Other Direct Charges ..		2,640		
Rs.		1,03,050	Rs.	1,03,050
To Balance—being Works Cost b/d. ..		85,000	By Total Cost c/d. ..	93,500
„ Administrative Expenses :— 10% on Works Cost ..		8,500		
Rs.		93,500	Rs.	93,500
To Total Cost b/d	Rs.	93,500		

Q. 243.

From the following particulars, prepare a Cost Sheet showing the cost per item and total cost per ton, in decimals for the period ended 31st December 1954:

	Rs.
Raw Materials	33,000
Productive Wages	35,000
Unproductive Wages	10,500
Factory Rent and Taxes	7,500
Factory Lighting	2,200
Factory Heating	1,500
Motive Power	4,400
Haulage	3,000
Directors' Fees (Works)	1,000
Directors' Fees (Office)	2,000
Factory Cleaning	500
Sundry Office Expenses	200
Estimating Expenses	800
Factory Stationery	750

	Rs.
Office Stationery	900
Loose Tools written off	600
Rent and Taxes (Office)	500
Water Supply	1,200
Factory Insurance	1,100
Office Insurance	500
Legal Expenses	400
Direct Expenses	3,000
Rent of Warehouse	300
Depreciation of Plant and Machinery	2,000
Depreciation of Office Buildings	1,000
Depreciation of Delivery Vans	200
Bad Debts	100
Advertising	300
Sales Department Salaries	1,500
Upkeep of Delivery Vans	700
Bank Charges	50
Commission on Sales	1,500

The Total Output for the period has been 15,000 tons.

Answer :

COST SHEET

Period ended 31st December 1954

(Output 15,000 tons.)

	Cost per ton		Total	
	Rs.	Rs.	Rs.	Rs.
Raw Materials	2.200		33,000	
Productive Wages	2.333		35,000	
Direct Expenses	.200		3,000	
Prime Cost =		4.733		71,000
Works Expenses :				
Unproductive Wages	.700		10,500	
Factory Rent and Taxes	.500		7,500	
Factory Lighting	.147		2,200	
Factory Heating	.100		1,500	
Motive Power	.294		4,400	
Haulage	.200		3,000	
Directors' Fees (Works)	.067		1,000	
Factory Cleaning	.033		500	
Estimating Expenses	.053		800	

	Rs.	Rs.	Rs.	Rs.
Factory Stationery ..	.050		750	
Loose Tools written off ..	.040		600	
Water Supply ..	.080		1,200	
Factory Insurance ..	.073		1,100	
Depreciation of Plant & Machinery	.133		2,000	
Works Expenses ..		2.470		37,050
Works Cost =		7.203		1,08,050
Office Expenses:				
Directors' Fees (Office) ..	.133		2,000	
Sundry Expenses ..	.013		200	
Office Stationery ..	.060		900	
Rent and Taxes (Office) ..	.033		500	
Office Insurance ..	.033		500	
Legal Expenses ..	.027		400	
Bank Charges ..	.004		50	
Depreciation of Office Building ..	.067		1,000	
Office and Administration Expenses		.370		5,550
Office Cost =		7.573		1,13,600
Selling and Distribution Expenses:				
Rent of Warehouse ..	.020		300	
Depreciation of Delivery Vans ..	.013		200	
Bad Debts ..	.007		100	
Advertising ..	.020		300	
Sales Department Salaries ..	.100		1,500	
Upkeep of Delivery Vans ..	.047		700	
Commission on Sales ..	.100		1,500	
Selling and Distribution Expenses		.307		4,600
Total Cost	Rs.	7.880	Rs.	1,18,200

Q. 244.

Prepare a Machine Hour Rate Computation for the month of January 1957 to cover the overhead expenses indicated below, relating to the particular machine.

		Per Annum Rs.
Rent of the department (Space occupied by machine one-fifth of the department)	..	780
Lighting (Number of men in the department 12. Two men engaged on this machine)	..	288
Insurance, etc.	..	36
Cotton Waste, Oil, etc.	..	60
Salary of Foreman (One-fourth of the Foreman's time is occupied by this machine and the remainder equally upon the other two machines)	..	6,000

The cost of the machine is Rs. 9,200 and has an estimated scrap value of Rs. 200.

It is assumed from past experience

(1) that the Machine will work for 1,800 hours per annum,

(2) that it will incur expenditure of Rs. 1,125 in respect of repairs and maintenance,

(3) that it consumes 5 units of power per hour at the cost of one anna per unit,

(4) that the working life of the machine will be 18,000 hours.

Answer :

MACHINE HOUR RATE COMPUTATION

Machine No.

Month ending 31st January 1957

				Rs.	As.	Ps.
Rent	..	..	..	13	0	0
Lighting	..	..	..	4	0	0
Salary of Foreman	..	..	..	125	0	0
Insurance	..	..	..	3	0	0
Cotton Waste, Oil, etc.	..	..	..	5	0	0
Total Standing Charges Rs.				150	0	0

				Rs.	as.	ps.
Hourly rate for Standing Charges (on the basis of 150 hours per month).	Rs.		$\frac{150}{}$	1	0	0
Hourly rate of depreciation	Rs.		$\frac{9,000}{18,000}$	0	8	0
Cost of Machine	Rs.	9,200				
Less: Scrap Value		200				
Amount to be written off	Rs.		9,000			
Hourly rate of repairs and Maintenance	Rs.		$\frac{1,125}{18,000}$	0	1	0
Power :						
5 Units per hour at 1 anna per Unit				0	5	0
Total Machine Hour Rate Rs.				1	14	0

Q. 245.

From the following particulars prepare a Cost Sheet showing the comparative cost per ton in Rs. as. ps. for each of the two periods:

	Three months ended. 31-3-55	Three months ended. 30-6-55
	Rs.	Rs.
Productive Wages	72,000	98,000
Administration	12,000	12,000
Raw Materials	36,000	49,000
Taxes and Insurance	750	750
Light and Water	1,000	1,000
Direct Expenses	9,000	12,500
Depreciation	2,000	2,000
Factory Rent	1,500	1,500
Unproductive Labour	30,000	41,000
Factory Repairs	3,000	4,500
Rs.	1,67,250	2,22,250

The tonnage produced in each quarter was Tons 12,000 and 16,000.

Answer :

COST SHEET

Three Months ended 31-3-55 12,000 Tons				Particulars	Three Months ended 30-6-55 16,000 Tons			
Total	Cost per ton				Total	Cost per ton		
Rs.	Rs.	As.	Ps.		Rs.	Rs.	As.	Ps.
36,000	3	0	0	Raw Materials	49,000	3	1	0
72,000	6	0	0	Productive Wages	98,000	6	2	0
9,000	0	12	0	Direct Expenses .. .	12,500	0	12	6
1,17,000	9	12	0	Prime Cost Rs.	1,59,500	9	15	6
				Working Expenses—				
30,000	2	8	0	Unproductive Labour ..	41,000	2	9	0
1,500	0	2	0	Factory Rent	1,500	0	1	6
3,000	0	4	0	Factory Repairs	4,500	0	4	6
1,000	0	1	4	Light and Water .. .	1,000	0	1	0
2,000	0	2	8	Depreciation	2,000	0	2	0
750	0	1	0	Taxes and Insurance ..	750	0	0	9
1,55,250	12	15	0	Works Cost Rs.	2,10,250	13	2	3
12,000	1	0	0	Administration	12,000	0	12	0
1,67,250	13	15	0	Cost of Production Rs.	2,22,250	13	14	3

Q. 246.

The Works cost of a certain article is Rs. 400 and the selling price is Rs. 800. The following direct Selling and Distribution Expenses were incurred:

	Rs.
Freight and cartage	40
Insurance	10
Commission	60
Packing cases	10

The estimated fixed Selling and Distribution Expenses for the year were Rs. 30,000 and the estimated value of Sales for the year was Rs. 1,50,000.

You are required to set out the final cost of the article using the method of percentage on sales value to recoup fixed Selling and Distribution Expenses.

Answer :

Percentage rate of the fixed Selling and Distribution Expenses on sales value is:

$$\frac{30,000}{1,50,000} \times \frac{100}{1} = 20\%$$

	Rs.
Works Cost	400
20% of selling price (i.e. fixed selling and distribution cost)	160
Direct Selling and Distribution Expenses :—	
Freight and cartage	40
Insurance	10
Commission	60
Packing cases	10
Final Cost Rs.	680
Profit Rs.	120
Selling Price Rs.	800

Q. 247.

From the following figures prepare Finished Stock Account of the Modern Manufacturing Co. Ltd., showing distinctive accounts for the different classes of finished products:

Summary Totals :—	X Rs.	Y Rs.
Production—small forgings	54,000	
—small castings		43,200
Returns from customers	5,400	
Transfers of Finished Casting from Y to X Rs. 9,000		
Sales	1,00,800	79,200
Issues to Operating Departments ..	7,200	9,000
Value of Closing Stock	12,600	14,400
Value of Finished Stock at the beginning of the period	25,200	21,600

Answer :

THE MODERN MANUFACTURING CO. LTD

FINISHED STOCK ACCOUNT

—	X	Y	Total	—	X	Y	Total
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
To Opening Stock	25,200	21,600	46,800	By "X" Dept. (Transfer)		9,000	9,000
,, Production a/c.	54,000	43,200	97,200	,, Operating Depts.	7,200	9,000	16,200
,, Sundry Debtors (Returns) ..	5,400		5,400	,, Closing Stock c/d.	12,600	14,400	27,000
,, "Y" Dept. (Transfer) .. .	9,000		9,000	,, Balance, being Cost Price of Goods sold, c/d.	73,800	32,400	1,06,200
Rs.	93,600	64,800	1,58,400	Rs.	93,600	64,800	1,58,400
To Balances, being Cost of Sales, c d...	73,800	32,400	1,06,200	By Sundry Debtors (Sales) ..	1,00,800	79,200	1,80,000
,, Balance, being Profit on Sales ..	27,000	46,800	73,800				
Rs.	1,00,800	79,200	1,80,000	Rs.	1,00,800	79,200	1,80,000
To Stock b/d. .. .. Rs.	12,600	14,400	27,000				

Q. 248.

The following details are extracted from the costing records of Copra Oil Products Ltd., for the year ended 31st March 1957.

Purchase of 5,400 tons of Copra for Rs. 2,20,000.

Particulars	Crushing Plant	Refining Plant	Finishing
	Rs.	Rs.	Rs.
Cost of Labour	2,750	1,100	1,650
Electric Power	660	396	264
Sundry Materials	110	2,200	....
Repairs to Machinery and Plant ..	308	363	154
Steam	660	495	495
Factory Expenses	1,452	726	242
Cost of Casks = Rs. 8,250			

3,200 tons of Crude Oil were produced. 2,600 tons of oil were produced by the refining process. 2,550 tons of Refined Oil were finished for delivery.

	Rs.
Copra Sacks sold	440
1925 tons of Copra Residue sold	12,100
Loss in Weight in Crushing 275 tons	
500 tons of by-products obtained from refining process	7,425

You are required to show the Account of each of the following processes concerned for the purpose of arriving at the cost per ton of each process, and the total cost per ton of the finished oil:

(1) Crushing Process, (2) Refining Process, and (3) Finishing Process, including Casking.

Process No. 1

COPRA CRUSHING ACCOUNT

—	Tons	Rs.	—	Tons	Rs.
To Copra	5,400	2,20,000	By Sale of Copra residue	1,925	12,100
„ Labour		2,750	„ Sale—Copra Sacks .		440
„ Electric Power ..		660	„ Balance—being cost of crude oil produced c/d.	3,200	2,13,400
„ Sundry Materials ..		110			
„ Repairs to Machinery & Plant ..		308	„ Loss of weight in crushing process ..	275	
„ Steam		660			
„ Factory Expenses ..		1,452			
Rs.	5,400	2,25,940	Rs.	5,400	2,25,940

Crushing Process Cost per ton Rs. 66-11-0.

Process No. II

REFINING ACCOUNT

—	Tons	Rs.	—	Tons	Rs.
To Cost of Crude Oil, b/d...	3,200	2,13,400	By by-products ..	500	7,425
„ Labour ..		1,100	„ Balance—being cost of refined oil produced c/d. ..	2,600	2,11,255
„ Electric Power ..		396			
„ Sundry Materials ..		2,200			
„ Repairs to Machinery and Plant ..		363	„ Loss of weight in process ..	100	
„ Steam ..		495			
„ Factory Expenses ..		726			
Rs.	3,200	2,18,680	Rs.	3,200	2,18,680

Cost of Refining Process per ton Rs. 81-4-0.

Process No. III

FINISHING AND CASKING ACCOUNT

—	Tons	Rs.	—	Tons	Rs.
To Cost of Refining Oil b/d.	2,600	2,11,255	By Balance—being cost of finished and casked oil	2,550	2,22,310
„ Labour ..		1,650	„ Loss in weight in process	50	
„ Electric Power ..		264			
„ Repairs to Machinery and Plant ..		154			
„ Steam ..		495			
„ Factory Expenses ..		242			
„ Cost of Casks ..		8,250			
Rs.	2,600	2,22,310	Rs.	2,600	2,22,310

Total Cost of Finished and Casked oil per ton Rs. 87-2-11.

Q. 249.

The following information is presented to you from the Costing and Financial Departments of the Building Contractors Ltd.:

MANUFACTURING ACCOUNT (COSTING DEPARTMENT)

	Rs.		Rs.
Completed Contracts ..	2,62,500	Wages ..	1,00,000
Finished Goods ..	80,000	Direct Materials ..	25,000
Balance, Work-in-Progress ..	1,12,200	Stores Consumed ..	2,00,000
		Chargeable Expenses ..	12,000
		Works Oncost ..	75,000
		Office Oncost ..	42,700
Rs.	4,54,700	Rs.	4,54,700

SUMMARY OF PROFITS (COSTING DEPARTMENT)

—	Cost	Sale or Contract Price	Profit
	Rs.	Rs.	Rs.
Completed Contracts	2,62,500	3,40,000	77,500
Sale from Stock	50,000	70,000	20,000
Rs.			97,500

The Trading Account as prepared by the Accountant stands as follows:

TRADING ACCOUNT (FINANCIAL DEPARTMENT)

		Rs.		Rs.
Productive Wages		1,00,000	Completed Contracts	3,40,000
Direct Goods		25,000	Sales from Stock	70,000
	Rs.		Finished Stock on hand ..	30,000
Stores Purchased ..	2,50,000		Work-in-Progress	1,12,200
Less : Stock in hand	48,000			
		2,02,000		
Chargeable Expenses		12,000		
Balance carried down		2,13,200		
Rs.		5,52,200	Rs.	5,52,200
TO WORKS EXPENSES.			By Balance brought down ..	2,13,200
Rent, Rates, etc. ..	18,000			
Supervision Charges ..	25,000			
Fuel	9,500			
Repairs	6,000			
Depreciation ..	10,000			
General Expenses ..	12,000	80,500		
TO OFFICE EXPENSES:				
Rent, Rates, Etc. ..	5,000			
Salaries .. .	17,000			
General Expenses .	15,000	37,000		
TO BALANCE :				
Being Profit, as per Financial Department ..		95,700		
Rs.		2,13,200	Rs.	2,13,200

It will be observed from the above information that the profit as shown by the Financial Accounts, viz. Rs. 95,700, is less than the profit as revealed by the Cost Accounts, viz. Rs. 97,500, by Rs. 1,800.

You are required to prepare a statement reconciling the two sets of figures showing where the difference arises.

Answer :

STATEMENT RECONCILING PROFIT AS PER COST ACCOUNTS WITH PROFIT AS PER FINANCIAL ACCOUNTS

	Rs.
Profit as per Cost Accounts ..	97,500
Add: Difference between Office Oncost Rs. 42,700 and actual Office Expenses Rs. 37,000 (Overcharged in Cost Accounts) ..	5,700
	1,03,200
Less: Difference between actual Works Expenses Rs. 80,500 and Works Oncost Rs. 75,000 (Undercharged in Cost Accounts) ..	5,500
	97,700
Less: Difference in item of Stores Consumed undercharged in Cost Accounts ..	2,000
Profit as per Financial Accounts Rs.	95,700

Q. 250.

The following is the Costing information of production, for the half-year ended 30th June 1957.

	Rs.
Purchases of Raw Materials	1,32,000
Direct Wages	1,10,000
Rent, Taxes, Insurance and Works Oncost ..	44,000
Carriage Inwards	1,584
Stock, 1st January 1957 :	
Raw Materials	22,000
Finished Product—1,600 Tons	17,600
Stock, 30th June 1957 :	
Raw Materials	24,464
Finished Product—3,200 tons	35,200
Work-in-Progress, 1st January 1957	5,280
Work-in-Progress, 30th June 1957	17,600
Cost of Factory Supervision	8,800
Sales—Finished Product	3,30,000

Advertising, discounts allowed and Selling Costs—12 annas per ton sold. 25,600 tons of commodity were produced during the period.

You are required to prepare a Production Account and ascertain:

(*a*) The value of the raw materials used.
(*b*) The cost of the output for the period.
(*c*) The cost of the turnover for the period.
(*d*) The net profit for the period.
(*e*) The net profit per ton of the commodity.

Answer :

PRODUCTION ACCOUNT

For the half year ended 30th June 1957

		Rs.			Rs.
Work-in-Progress ..		5,280	By Work-in-Progress (at end) ..		17,600
Materials consumed :—			,, Prime Cost of Goods manufactured, c/d. ..		2,28,800
Opening Stock ..	22,000				
Purchases ..	1,32,000				
	1,54,000				
Less : Closing Stock ..	24,464				
		1,29,536			
Carriage Inwards ..		1,584			
Direct Wages ..		1,10,000			
	Rs.	2,46,400		Rs.	2,46,400
To Prime Cost of manufactured Goods b/d. ..		2,28,800	By Cost of Finished Goods, c/d. ..		2,81,600
Rents, Rates, Insurance and Works Oncost ..		44,000			
Factory Supervision ..		8,800			
	Rs.	2,81,600		Rs.	2,81,600
	Tons	Rs.		Tons	Rs.
To Stock of Finished Goods 1st January 1955	1,600	17,600	By Sales	24,000	3,30,000
Cost of Finished Goods, b/d.	25,600	2,81,600	,, Stock of Finished Goods at end	3,200	35,200
Advertising, Discount and Selling Costs ..		18,000			
Net Profit ..		48,000			
	27,200	3,65,200		27,200	3,65,200

Notes :—According to the above working,

(*a*) the value of raw materials consumed works out to Rs. 1,29,536. Usually the item of Carriage Inwards is added to Raw Materials Cost. If from the total carriage, carriage on Closing Stock is deducted, the balance represents carriage on Raw Materials consumed.

(*b*) The Cost of Output for the period is Rs. 2,81,600

(*c*) The Cost of Turnover for the period is Rs 2,82,000 arrived at as under —

			Rs
	Opening Stock		17,600
Add	Cost of Finished Goods		2,81,600
Add	Advertising		18,000
		Rs	3 17,200
Less:	Stock of Finished Goods		35,200
	Cost of Turnover	Rs	2,82,000

(*d*) The Net Profit for the period is Rs 48,000

(*e*) The Net Profit per ton of Commodity is Rs 2

(*f*) The tonnage of Finished Goods sold is arrived at thus —

		Tons
	Opening Stock	1,600
Add	Finished Goods Produced	25,600
		27,200
Less	Closing Stock	2,200
	Sales	25,000

Q. 251.

Prepare Manufacturing Account in the Cost Ledger from the following particulars and give the Trial Balance as it would appear after closing the Cost Ledger:

	Rs
Direct Wages	96,000
Stores	57,600
Direct Goods	9,600
Chargeable Expenses	4,800
Works Oncost	19,200
Office Oncost	12,480
Works Oncost Suspense Account	4,800
Office Oncost Suspense Account	3,360
Work-in-Progress	31,200
Finished Stock	43,200
Completed Contracts	1,14,720
Sales from Stock	14,400

Answer :

COST LEDGER
MANUFACTURING ACCOUNT

for the year ended . .

	Rs.		Rs.
To Completed Contracts ..	1,14,720	By Direct Wages	96,000
„ Sales from Stock ..	14,400	„ Stores	57,600
		„ Direct Goods	9,600
	1,29,120	„ Chargeable Expenses ..	4,800
Balance c/d. ..	82,560	„ Works Oncost	19,200
		„ Office Oncost	12,480
		Rs.	1,99,680
		Profit ..	12,000
		Rs.	2,11,680
Rs.	2,11,680	By Balance b/d. ..	82,560

TRIAL BALANCE

After closing the Cost Ledger

	Rs.	Rs.
Work-in-Progress Account	31,200	
Works Oncost Suspense Account ..	4,800	
Office Oncost Suspense Account ..	3,360	
Finished Stock Account	43,200	
Manufacturing Account		82,560
Rs.	82,560	82,560

Note—The closing balance on the Manufacturing Account at each period is always represented by the value of the total assets carried over to the next period.

Q. 252.

From the following particulars, prepare (1) a statement of Cost of Manufacture for the year 1957; (2) a statement of Profit as per Cost Accounts; (3) Profit and Loss Account in the Financial Books, and show to what you would attribute the difference in the profits as shown by (2) and (3):

	Rs.
Opening Stock of Raw Materials	1,44,000
Opening Stock of Finished Articles	2,88,000
Purchase of Raw Materials	8,64,000
Stock of Raw Materials at end	2,16,000
Stock of Finished Articles at end	72,000
Wages	3,60,000

Calculate Factory Oncost at 20% on Prime Cost and Office Oncost at 80% on Factory Oncost. Actual Works Expenses amounted to Rs. 2,27,150 and actual Office Expenses amounted to Rs. 1,85,950. The selling price was fixed at 20 per cent above cost price. In statement (1) also show what percentage does each individual item of cost bear to the Total Cost.

Answer :

(1) STATEMENT OF COST OF MANUFACTURE FOR THE YEAR 1957

Percentage on Total Cost			Rs.	Rs.
	Raw Materials :—			
	Opening Stock	.. ..	1,44,000	
	Add Purchases	.. ..	8,64,000	
			10,08,000	
50.55	Less Closing Stock	..	2,16,000	7,92,000
22.98	Wages	.. .. ..		3,60,000
14.71	Factory Oncost :— 20% on Rs. 11,52,000	.. ..		2,30,400
11.76	Office Oncost :— 80% on Rs. 2,30,400	.. ..		1,84,320
100.00%	Total Cost	=	Rs.	15,66,720

(2) PROFIT AS PER COST ACCOUNTS

	Rs.
Finished Articles, 1-1-57	2,88,000
Add Cost of Manufactured Articles during the year	15,66,720
	18,54,720
Less Finished Articles on 31-12-57	72,000
Total Cost of Finished Articles Sold ..	17,82,720
Selling Price = (Cost plus 20%)	21,39,264
Profit = Rs.	3,56,544

(3) PROFIT AND LOSS ACCOUNT (FINANCIAL BOOKS)

		Rs.			Rs.
To Stock—1st January 1957 :	Rs.		By Sales		21,39,264
Raw Materials ..	1,44,000		„ Stock at end :—	Rs.	
Finished Articles ..	2,88,000		Raw Materials ..	2,16,000	
		4,32,000	Finished Articles	72,000	
Purchase of Raw Materials ..		8,64,000			2,88,000
Wages		3,60,000			
Works Expenses		2,27,150			
Office Expenses		1,85,950			
Profit		3,58,164			
Rs.		24,27,264	Rs.		24,27,264

The difference between the two profits is due to an overcharge in Cost Accounts of Rs. 3,250 in respect of Factory Oncost and an undercharge in respect of Office Oncost of Rs. 1,630, the net excess charge being Rs. 1,620.

Q. 253.

The information given below is extracted from the Cost Accounts of a Factory producing a commodity in the manufacture of which three processes are involved. Prepare Process Cost Accounts showing the cost of the output and the cost per unit at each stage of manufacture.

(1) The operations in each separate process are completed daily.

(2) The value at which units are to be charged to Processes two and three is the cost per unit of processes one and one plus two respectively.

	Process No.		
	1	2	3
	Rs.	Rs.	Rs.
Direct Wages	2,500	5,000	6,500
Machine Expenses	1,400	1,200	1,200
Factory Oncost	1,100	1,550	900
Raw Materials Consumed	8,000		
	Units	Units	Units
Production (gross)	2,750		
Wastage	150	210	200
Stock, 1st January 1955		250	500
Stock, 31st January 1955		440	100

Answer :

Process No. 1

	Rs.		Units	Rs.
To Raw Materials	8,000	By transfer to Process II ..	2,600	13,000
Direct Wages	2,500	Normal Wastage	150	
Machine Expenses	1,400	Cost per Unit Rs. 5		
Factory Oncost	1,100			
Rs.	13,000	Rs.	2,750	13,000

Process No. II

	Units	Rs.		Units	Rs.
To Stock, 1st January 1955 ..	250	1,250	By Transfer to Process III	2,200	19,800
Transfer from Process I ..	2,600	13,000	Stock, 31st Jan. 1955 ..	440	2,200
Direct Wages		5,000	Normal Wastage ..	210	
Machine Expenses ..		1,200	Cost per Unit Rs. 9		
Factory Oncost		1,550			
Rs.	2,850	22,000	Rs.	2,850	22,000

Process No. III

	Units	Rs.		Units	Rs.
To Stock, 1st January 1955 ..	500	4,500	By Finished Goods ..	2,400	32,000
Transfer from Process II ..	2,200	19,800	„ Stock, 31st January 1955	100	900
Direct Wages		6,500	Normal Wastage ..	200	
Machine Expenses ..		1,200	Cost per Unit Rs. 13-5-4		
Factory Oncost		900			
Rs.	2,700	32,900	Rs.	2,700	32,900

Note.—It has been assumed that stocks consist of raw materials at each stage of production and not units which have been subjected to the process

Q. 254.

The following are the balances, of the Impersonal Ledger of a Colliery, relating to revenue at the end of the year:

		Rs
Wages paid for Coal Production . .		5,80,000
Coal for Colliery Consumption ..		45,000
Timber used in Coal Production . .		64,000
Ropes do do .. .		12,000
Stores do do		76,000
Royalties paid . ..		42,000
General Charges chargeable to Coal Production		70,000
Salaries chargeable to Coal Production .. .		36,000
Coal sold (including Colliery consumption),	1,12,000 tons	8,84,000
Wages paid for coke-making		50,000
Stores used for coke-making . ..		37,000
Salaries chargeable to coke-making . .		8,000
Coke sold 43,500 tons		5,40,000

The stock of Coal at the beginning of the year amounted to 7,000 tons valued at Rs. 5 per ton, and at the end of the year 15,000 tons valued at a similar rate. The stock of Coke at the beginning of the year amounted to 2,000 tons valued at Rs. 10 per ton, and at the end of the year 500 tons valued at a similar rate.

The total production of the Colliery was 1,85,000 tons of Coal and 42,000 tons of Coke; 65,000 tons of Coal being used for coke-making.

Prepare separate Production Accounts for Coal and Coke showing the cost of each item of expense per ton of coal and coke respectively, taking coal used for Coke making at Cost price, working to two places of decimals only.

Answer : COAL PRODUCTION ACCOUNT

	Cost per Ton	Details	Cost		
	Rs.	Rs.	Rs.		Rs.
To Stock, 7,000 tons at Rs. 5			35,000	By Sales, (including colliery consumption) 1,12,000 Tons ..	8,84,000
,, Wages	3.14	5,80,000		,, Coke Production 65,000 Tons at Rs. 5 per ton	3,25,000
,, Coal for Colliery Consumption ..	.24	45,000		,, Stock of Coal 15,000 tons at Rs. 5 per ton..	75,000
,, Timber used in Coal Production	.35	64,000			
,, Ropes Production ..	.06	12,000			
,, Stores Production ..	.41	76,000			
,, Royalties paid ..	.23	42,000			
,, General Charges ..	.38	70,000			
,, Salaries	.19	36,000			
,, Production of 1,85,000 tons at	5.00		9,25,000		
,, Profit			3,24,000		
		Rs.	12,84,000	Rs.	12,84,000

COKE PRODUCTION ACCOUNT

	Cost per Ton	Details	Cost		
	Rs.	Rs.	Rs.		Rs.
To Stock 2,000 tons at Rs. 10 per ton ..			20,000	By Sales 43,500 Tons ..	5,40,000
,, Coal consumed 65,000 tons at Rs. 5 ..	7.74	3,25,000		,, Stock 500 Tons at Rs. 10	5,000
,, Wages	1.19	50,000			
,, Stores	.88	37,000			
,, Salaries Chargeable ..	.19	8,000			
,, Production of 42,000 tons at	10.00		4,20,000		
,, Profit			1,05,000		
Rs.			5,45,000	Rs.	5,45,000

Q. 255.

The Empire Industries Ltd. manufacture a standard article in three qualities, of which they produced during the year ending 31st March 1957 the following:

4,200 articles of quality X
4,880 „ „ „ Y
6,500 „ „ „ Z

The stocks of Finished Goods at 1st April 1956, were:
Quality X 200 articles; Quality Y 300 articles; Quality Z 100 articles.
Sales during the year were:

Quality X 4,000 articles at Rs. 12 each
„ Y 5,000 „ „ „ 8 „
„ Z 6,000 „ „ „ 4 „

and the following further figures were extracted from the Company's books in respect of the year:

	Rs.
Work-in-Progress at 1st April 1956	4,700
„ „ 31st March 1957	1,600
Cost of Raw Material used in manufacture ..	26,000
Cost of Stores used in manufacture	3,000
Manufacturing Wages	41,400
Depreciation (Works)	2,000
Works Oncost	10,000

Assuming the rate per cent of gross profit to be the same in the case of all three qualities, prepare accounts showing the gross profit on trading to be carried to the Company's Profit and Loss Account for the year.

Answer :

MANUFACTURING AND TRADING ACCOUNTS
for the year ended 31st March 1957

		Rs.			Rs.
To cost of Raw Materials Consumed		26,000	By Cost of Production :	Rs.	
„ Stores Used		3,600	X Articles 4,200 at Rs. 9	37,800	
„ Wages		41,400	Y Articles 4,800 at Rs. 6	28,800	
			Z Articles 6,500 at Rs. 3	19,500	
Prime Cost =		71,000			86,100
„ Depreciation (Works) ..		2,000			
„ Works Oncost		10,000			
		83,000			
„ Works in Progress, 1st April 1956 ..	Rs. 4,700				
Less Works in Progress 31st March 1957	1,600				
		3,100			
Rs.		86,100	Rs.		86,100

MANUFACTURING AND TRADING ACCOUNTS (*Contd.*)

To Stocks, 1st April 1957	Rs.	Rs.	By Sales:	Rs.	Rs.
200 X Articles at Rs. 9	1,800		4,000 X Articles at Rs. 12	48,000	
300 Y Articles at Rs. 6	1,800		5,000 Y Articles at Rs. 8	40,000	
100 Z Articles at Rs. 3	300		6,000 Z Articles at Rs. 4	24,000	
		3,900			1,12,000
„ Cost of Production:			By Stock, 31st March 1957:		
4,200 X Articles at Rs. 9	37,800		400 X Articles at Rs. 9	3,600	
4,800 Y Articles at Rs. 6	28,800		100 Y Articles at Rs. 6	600	
6,500 Z Articles at Rs. 3	19,500		600 Z Articles at Rs. 3	1,800	
		86,100			6,000
„ Gross Profit, 25 per cent on Sales		28,000			
	Rs.	1,18,000		Rs.	1,18,000

Note.— As the rate of Gross Profit is the same in the case of all three articles, cost of production must be in direct proportion to selling price of the articles produced, i.e.

Selling Prices:	Rs
X Articles, 4,200 at Rs. 12	50,400
Y Articles, 4,800 at Rs. 8	38,400
Z Articles, 6,500 at Rs. 4	26,000
Total Selling Price of Articles produced	1,14,800
Less Total Cost Price as per Manufacturing Account	86,100
Gross Profit Rs.	28,700 = 25% of Selling Price

Q. 256.

A Firm of Building Contractors began to trade on 1st April 1957. The following was the expenditure on a contract for Rs. 3,00,000.

	Rs.
Materials issued to contract	51,000
Plant used for contract	15,000
Wages Incurred	81,000
Other expenses incurred	5,000

Cash received on account to 31st of March 1957, amounted to Rs. 1,28,000 being 80 per cent of the work certified.

Of the plant and materials charged to the contract, plant which cost Rs. 3,000 and materials which cost Rs. 2,500 were lost.

On 31st March 1957, plant, which cost Rs. 2,000, was returned to stores; the cost of work done but uncertified was Rs. 1,000 and materials costing Rs. 2,300 were in hand on site.

Charge 15% depreciation of plant, reserve one-third of profit received, and prepare Contract Account from the above particulars.

Answer:

CONTRACT ACCOUNT

For the year ended 31st March 1957

		Rs.			Rs.
To Materials		51,000	By Contractee's Account:		
„ Wages		81,000	Work certified		1,60,000
„ Plant		15,000	„ Profit & Loss Account:		
„ Expenses		5,000	Plant Lost	3,000	
„ Profit and Loss Account:			Materials Lost	2,500	
⅔rds profit received		14,400			
„ Balance c/fd:					5,500
⅓rd profit received	7,200		„ Plant and Machinery Account:		
Profit reserved			Plant returned (cost)	2,000	
(20% of Rs. 27,000)	5,400		*Less*: Depreciation	300	
		12,600			1,700
			„ Work-in-Progress Account:		
			Materials on site	2,300	
			Work uncertified	1,000	
			Plant less Depreciation	8,500	11,800
Rs.		1,79,000	Rs.		1,79,000

Note.—The value of Plant at the close of the period has been ascertained thus:—

	Rs.	Rs.
Cost of Plant		15,000
Less: Plant lost	3,000	
„ „ Returned	1,700	
		4,700
	Rs.	10,300
Less: Depreciation on Rs. 12,000 at 15%		1,800
Closing book value of remaining plant Rs.		8,500

Q. 257.

Building Contractors Ltd. undertake contracts. On 31st October 1955, when the annual accounts were prepared the position of contract No. 101, which was commenced on 1st January 1955 was as under:

	Rs.
Materials consumed	37,500
Materials on hand	1,500
Wages paid	43,750
Wages outstanding	625
Proportionate share of indirect expenses	1,875
Cost of Plant	6,250

The value of work certified was Rs. 90,000 of which Rs. 67,500 had been received. Work completed but uncertified was valued at Rs. 2,500.

The contract price was Rs. 1,50,000.

The Plant on the site was valued at Rs. 5,000 on 31st October 1955.

Prepare Contract Account No. 101 after taking credit for profit which you think reasonable.

Answer :

CONTRACT ACCOUNT No. 101

		Rs.			Rs.
1955			1955		
Oct. 31	To Materials ..	37,500	Oct. 31	By Work Certified ..	90,000
	„ Wages paid ..	43,750		„ Materials on hand c/d. ..	1,500
	„ Proportionate share of Indirect expenses ..	1,875		„ Work completed but uncertified c/d. ..	2,500
	„ Plant ..	6,250		„ Plant c/d. ..	5,000
	„ Outstanding Wages c/d.	625			
	„ Profit c/d. ..	9,000			
	Rs.	99,000		Rs.	99,000
	To Profit & Loss A/c. ..	4,500		By Profit b/d. ..	9,000
	„ Balance c/d. ..	4,500			
	Rs.	9,000		Rs.	9,000
Nov. 1	To Balance b/d. ..	1,500	Nov. 1	By Balance of Profit b/d. ..	4,500
	„ Materials ..	1,500		„ Outstanding Wages b/d.	625
	„ Work uncertified ..	2,500			
	„ Plant ..	5,000			

Note.—It is usual to take to the credit of Profit and Loss Account only two-thirds of the profit, viz Rs. 6,000. As the cash received is only 75 per cent of the work certified, it is preferable to calculate the profit on the basis of cash received, viz ($6{,}000 \times \frac{75}{100}$ 4,500)

Q. 258

A firm of Builders, carrying out large contracts, kept in a Contract Ledger, separate account for each contract. The following particulars relate to certain contract carried during the year ended 30th June 1957:

	Rs.
Work certified by Architects	1,43,000
Cash received from the contractee	1,30,000
Materials sent to site	64,500
Labour engaged on site	54,800
Plant installed at site	11,300
Value of Plant at 30th June 1957	8,200
Cost of Work not yet certified	3,400
Establishment charges	3,250

	Rs.
Direct Expenditure	**2,400**
Wages accrued due at 30th June 1957	**1,800**
Materials in hand, 30th June 1957	**1,400**
Materials returned to store	**400**
Direct expenditure accrued due at 30th June 1957 ..	**200**
Contract Price	**2,00,000**

You are required to prepare an account showing the profit on the contract to 30th June 1957.

Answer :

CONTRACT ACCOUNT

		Rs.			Rs.
1956–1957 July / June	To Materials	64,500	1957 June 30	By Plant c/d.	8,200
	,, Labour	54,800		,, Materials in hand c/d.	1,400
	,, Plant	11,300		,, Materials returned to store	400
	,, Establishment charges	3,250		,, Cost of work not yet certified c/d. ..	3,400
	,, Direct Expenditure ..	2,400			13,400
1957 June 30	,, Wages accrued due c/d.	1,800		,, Contractee's personal account	1,43,000
	,, Direct Expenditure accrued due c/d. ..	200			
		1,38,250			
	,, Profit & Loss Account	11,000			
	,, Work-in-Progress A/c.	7,150			
	Rs.	1,56,400		Rs.	1,56,400
1957 July 1	To Plant b/d.	8,200			
	,, Materials in hand b/d.	1,400			
	,, Cost of work not yet certified b/d. ..	3,400			

Notes.—The proportion of profit taken to the credit of Profit and Loss Account has been calculated as under.

	Rs.
Expenditure incurred	1,38,250
Less Credit	13,400
Net Expenditure	1,24,850
Net Profit	18,150
Value of work certified	1,43,000

Proportion of profit to be taken to the credit of P & L Account: ⅔rds of Rs. 18,150 = Rs. 12,100

This amount of Rs. 12,100 Profit is now taken credit for on cash basis as under:

$$\text{Cash received} \quad .. \quad .. \quad .. \quad = \text{Rs. } \frac{1,30,000}{1,43,000}$$

$$\text{Value of work certified} \quad \frac{1,30,000}{1,43,000} \text{ of Rs. } 12,100 = \text{Rs. } 11,000$$

Q. 259.

N. Deshmukh commenced business on 1st January 1957 as a manufacturer of steel trunks making three standard types which he designates as X, Y and Z. The following is his Trading and Profit and Loss Account for the year ended 31st December 1957:

	Rs.			Rs.
To Materials charged out	31,300	By Sales		72,000
" Direct Labour	21,500	" Stock of finished steel trunks ..		9,775
" Works Expenses	17,000	" Work-in-Progress on unfinished steel trunks:		
Gross Profit c/d.	16,975	Materials ..	3,200	
		Labour ..	1,000	
		Works Oncost ..	800	
				5,000
Rs.	86,775	Rs.		86,775
To Office Expenses	10,100	By Gross Profit b/d.		16,975
" Net Profit	6,875			
Rs.	16,975	Rs.		16,975

He has kept Cost Accounts in respect of each type, charging out materials and labour at actual cost, "Works Oncost" at 80% on labour and "Office Oncost" at 15% on "Works Cost". From the following information and the above particulars, you are required to prepare (1) Statement showing profit per steel trunk sold and total profit per Cost Accounts; (2) Works Oncost Account; (3) Office Oncost Account; (4) Reconciliation of profits per Cost Accounts with Profit and Loss balance of Rs. 6,875.

		X			Y			Z		
		Rs.	a.	p.	Rs.	a.	p.	Rs.	a.	p.
Average cost of materials per finished steel trunk	=	13	2	0	14	12	0	17	8	0
Average cost of labour per finished steel trunk	=	9	6	0	11	4	0	12	8	0
Sale price per steel trunk	=	40	0	0	45	0	0	50	0	0
Number of steel trunks manufactured ..	=	400			600			800		
Number of steel trunks sold	=	300			500			750		

Answer :

STATEMENT SHOWING PROFIT PER STEEL TRUNK

		X			Y			Z		
		Rs	a	p	Rs.	a	p.	Rs.	a	p
Cost of materials per finished steel trunk		13	2	0	14	12	0	17	8	0
Cost of Labour		9	6	0	11	4	0	12	8	0
Works Oncost—80% on Labour		7	8	0	9	0	0	10	0	0
Works Cost =		30	0	0	35	0	0	40	0	0
Office Oncost—15% on Works Cost		4	8	0	5	4	0	6	0	0
Total cost per steel trunk	— Rs	34	8	0	40	4	0	46	0	0
Sale price per steel trunk		40	0	0	45	0	0	50	0	0
Less Total Cost		34	8	0	40	4	0	46	0	0
Profit per steel trunk	— Rs	5	8	0	4	12	0	4	0	0

MANUFACTURING ACCOUNT

Showing Profit as per Cost Books

	Rs		Rs
To Sales	72,000	**By Materials**	31,300
„ Finished Stock Account	9,775	**„ Direct Wages**	21,500
„ Work in-Progress	5,000	**„ Works Oncost (80% on labour)**	17,200
		„ Office Oncost (15% on Works Cost)	10,500
		„ Net Profit	6,275
Rs	86,775	Rs	86,775

Works Oncost Account

	Rs		Rs
To Manufacturing Account	17,200	**By X Dept**	3,000
		„ Y Dept.	5,400
		„ Z Dept.	8,000
		„ Work-in Progress	800
Rs.	17,200	**Rs.**	17,200

Office Oncost Account

		Rs.			Rs.
To Manufacturing Account	..	10,500	By X Dept	..	1,800
			" Y Dept.	..	3,150
			" Z Dept.	..	4,800
			" Work-in-Progress		750
	Rs.	10,500		Rs.	10,500

STATEMENT SHOWING RECONCILIATION BETWEEN PROFITS AS PER COST BOOKS AND FINANCIAL BOOKS

	Rs.	Rs.	Rs.
Profit as per Profit and Loss Account (in Financial Books)			6,875
Less: Works Oncost—being excess amount charged in Cost Books	(17,200)		
	(17,000)		
		200	
Less: Office Oncost—being excess amount charged in Cost Books	(10,500)		
	(10,100)		
		400	
			600
Profit as per Cost Books		Rs.	6,275

Q. 260.

A rate-fixer issues an instruction to A to work up 100 articles, and to B to work up 150 articles, the normal wage rate to be paid in any event, being both for A and B at 4 annas per hour worked. The scheduled time allotted to A is 100 hours and to B 140 hours. If the work is completed within these hours, A and B are to be paid at the rate of 5 annas per hour. In either case, for each working hour saved on the allotted time, A or B is to receive a bonus of 6 annas per hour.

A completes his work in 96 hours and B in 136 hours. What are the amounts payable to A and B respectively? What percentage of increase on the normal wage of 4 annas do A and B respectively obtain? What are the costs per article worked by A and B respectively?

Show also the time taken to work each article, and the actual wage-rate per article paid to each of them.

Answer :

Workman	Articles to be worked	Normal Wage Rate	Standard Time	Fixed Rate of Pay	Amount payable at fixed rate	Time taken	Time saved	Bonus at 6 annas per hour	Total wage payable	Wages at Normal Rate	Increase	% of Increase on normal wage	Time taken per article	Actual rate per wages paid	Cost per Article
		P.H.	Hours	P.H.	Rs. as.	Hrs.	Hrs.	Rs. as.	Rs. as.	Rs. as.	Rs. as.		Hrs.	As. ps.	As. ps.
A	100	4 as.	100	5 as.	31 4	96	4	1 8	32 12	24 0	8 12	36%	.96	5 5.5	5 2.88
B	150	4 as.	140	5 as.	43 12	136	4	1 8	45 4	34 0	11 4	33%	.906	5 3.9	4 9.9

Q. 261.

The Accounts of Swadeshi Manufactures Ltd., for the year ended 31st December 1957, show the following:

	Rs.
Stock of Materials, 1st January 1957	67,200
Materials Purchased	2,59,000
Counting House Salaries	17,640
Bad Debts written off	9,100
Travellers' Salaries and Commission	10,780
Depreciation written off (Office Furniture)	420
Drawing Office Salaries	9,100
Rent, Rates, Taxes and Insurance (Factory)	11,900
Productive Wages	1,76,400
Directors' Fees	8,400
General Expenses	4,760
Gas and Water (Factory)	1,680
Travelling Expenses	2,940
Sales	6,45,540
Manager's Salary (two-thirds Factory, one-third Office)	15,000
Depreciation written off, Plant, Machinery and Tools	9,100
Cash Discounts allowed	4,060
Repairs of Plant, Machinery and Tools	6,230
Carriage and Cartage Outwards	6,020
Direct Expenses	10,010
Rent, Rates, Taxes and Insurance (Office)	2,800
Gas and Water (Office)	560
Stock of Materials, 31st December 1957	87,920

Prepare a statement giving the following information:

(*a*) Materials consumed;
(*b*) Prime Cost;
(*c*) Factory Oncost, and its percentage on Wages;
(*d*) Factory Cost;
(*e*) General Oncost, and its percentage on Factory Cost;
(*f*) Total Cost; and
(*g*) Net Profit.

Answer:

STATEMENT SHOWING CONSTITUENT AND TOTAL COSTS

	Rs.	Rs.	Rs.
Stock of Materials—1st January 1957	67,200		
Purchases	2,59,000		
	3,26,200		
Less: Stock—31st December 1957	87,920		
(*a*) Materials Consumed =		2,38,280	
Productive Wages		1,76,400	
Direct Expenses		10,010	
(*b*) Prime Cost =			4,24,690
Works Expenses:			
Factory Rent, Taxes, Insurance, etc.		11,900	
Manager's Salary (Two-thirds)		10,000	
Drawing Office Salaries		9,100	
Depreciation on Plant, Machinery and Tools		9,100	
Repairs to Plant and Machinery		6,230	
Factory Gas and Water		1,680	
(*c*) Factory Oncost =			48,010
(*d*) Factory Cost =			4,72,700
Office and General Expenses:			
Counting House Salaries		17,640	
Bad Debts written off		9,100	
Travellers' Salaries and Commission		10,780	
Directors' Fees		8,400	
Carriage Outwards		6,020	
Manager's Salary (One-third)		5,000	
General Expenses		4,760	
Travelling Expenses		2,940	
Office Rent, Rates, Taxes and Insurance		2,800	
Cash Discount		4,060	
Depreciation on Furniture		420	
Gas and Water (Office)		560	
(*e*) General Oncost =			72,480
(*f*) Total Cost =			5,45,180
(*g*) Net Profit =			1,00,360
Sales =		Rs.	6,45,540
Percentage of Factory Oncost to Wages		27.22	
Percentage of General Oncost to Factory Cost		15.33	

Q. 262.

On the 30th April 1957, a manufacturer was required to quote for a contract for the supply of 1,000 Electric Stoves. From the following data, prepare a statement showing the price to be quoted to give the same percentage of net profit on turnover as was realised during the six months to 31st March 1957:

	Rs.
Stock of Materials, 1st October 1956	35,000
Stock of Materials, 31st March 1957	4,900
Purchases of Materials, six months to 31st March 1957	52,500
Factory Wages	95,000
Factory Expenses	17,500
Establishment Expenses	10,000
Completed Stock in hand, 1st October 1956 ..	Nil
Completed Stock in hand, 31st March 1957 ..	35,000
Sales	1,89,000

The number of stoves manufactured during the six months was 4,000 including those sold and those in stock at the close of the period. The Stoves to be quoted for are of uniform quality and make, and similar to those manufactured during the six months to 31st March 1957. As from 1st April 1957, the cost of factory labour had increased by 10%, and material cost by 15%.

Answer:

COST AND PRODUCTION SHEET
for the six months ended 31st March 1957
(Output—4,000 Electric Stoves)

		Cost per Stove	Total Cost		Total
	Rs.	Rs.	Rs.		Rs.
To Opening Stock of Materials ..	35,000			By Cost of Output c/d. ..	2,05,100
„ Materials Purchased	52,500				
	87,500				
Less Closing Stock	4,900				
Materials Consumed	82,600	20.650	82,600		
Factory Wages ..		23.750	95,000		
Prime Cost ..		44.400	1,77,600		
Factory Expenses ..		4.375	17,500		
Factory Cost ..		48.775	1,95,100		
Establishment Expenses ..		2.500	10,000		
Total Cost Rs.		51.275	2,05,100	Rs.	2,05,100
To Cost of output b/d. ..		51.275	2,05,100	By Closing Stock of Finished Goods ..	35,000
				„ Cost of Stoves sold c/d.	1,70,100
Rs.		51.275	2,05,100	Rs.	2,05,100
To Cost of Stoves sold b/d. ..			1,70,100	By Sales ..	1,89,000
„ Profit on turnover (10%) ..			18,900		
		Rs.	1,89,000	Rs.	1,89,000

STATEMENT SHOWING THE ESTIMATED SALE PRICE FOR 1,000 ELECTRIC STOVES

		Cost per Stove	Estimated Cost of 1,000 Stoves
	Rs.	Rs.	Rs.
Materials Consumed	20.6500		
Add: 15% increase in cost	3.0975	23.7475	23,747.50
Factory Wages	23.750		
Add: 10% increase in wages	2.375	26.1250	26,125.00
Prime Cost =		49.8725	49,872.50
Factory Expenses		4.3750	4,375.00
Factory Cost =		54.2475	54,247.50
Establishment Expenses		2.5000	2,500.00
Total Estimated Cost =		56.7475	56,747.50
Add: Profit one-ninth on Cost (to give 10% on turnover) ..			6,305.28
Estimated Sale Price =		Rs.	63,052.78

Q. 263.

Two types of products X and Y are produced in a factory, in which the materials used are identical and in which each undergoes two processes, factory and finishing. The wages are separately recorded; materials used are divided in output ratio; factory and finishing charges are apportioned in the labour ratio of each process.

You are required to prepare a statement of cost per hundred articles from the following particulars, and to show the percentage of profit, if the selling price of article X is 4 as. and of article Y 5 as.

Articles	*Articles*
Output of X = 2,23,020	Output of Y = 89,208
Factory Materials:	Rs.
Opening Stock	6,720
Purchases	19,040
Closing Stock	5,180
Finishing Materials:	
Opening Stock	2,660
Purchases	6,440
Closing Stock	2,240
Factory Wages, X	10,920
„ „ Y	7,980
Finishing Wages, X	4,480
„ „ Y	1,680
Factory Charges	3,780
Finishing Charges	1,540
General Oncost (to be allocated on the basis of works cost)	8,820

Answer :

STATEMENT OF COST

—		Total	Product X	Product Y
FACTORY PROCESS :		Rs.	Rs.	Rs.
	Rs.			
Materials—				
Opening Stock	6,720			
Add: Purchases	19,040			
Rs.	25,760			
Less: Closing Stock	5,180	20,580	14,700	5,880
Wages	..	18,900	10,920	7,980
Factory Charges	..	3,780	2,184	1,596
	Rs.	43,260	27,804	15,456
FINISHING PROCESS :				
	Rs.			
Materials—				
Opening Stock	2,660			
Add: Purchases	6,440			
Rs.	9,100			
Less: Closing Stock	2,240	6,860	4,900	1,960
Wages	..	6,160	4,480	1,680
Finishing Process	..	1,540	1,120	420
	Rs.	14,560	10,500	4,060
TOTAL COST :				
Factory Process	..	43,260	27,804	15,456
Finishing Process	..	14,560	10,500	4,060
Works Cost =	Rs.	57,820	38,304	19,516
General Oncost	..	8,820	5,843	2,977
Total Cost =	Rs.	66,640	44,147	22,493
			Rs. a. p.	Rs. a. p.
Cost per 100 articles	..	..	19 12 9	25 3 5
Selling Price per 100 articles	..	..	25 0 0	31 4 0
Profit ..		Rs.	5 3 3	6 0 7
Percentage of Profit on Cost ..		Rs.	26 4 3	23 15 1

Q. 264.

The Contractors Ltd. undertook a contract for Rs. 4,00,000 on 1st July 1955. The following expenses were incurred upto 31st December 1955:

	Rs.
Materials issued from Stores	35,000
Materials charged direct	5,000
Direct Charges	2,000
Wages	20,000

The amount of work certified was Rs. 80,000 of which the Contractors received 75% in cash.

The transactions for the year 1956 were as under:

	Rs.
Materials issued from Stores	90,000
Wages	40,000
Direct Charges ..	4,000

The cost of Special Plant and Machinery issued on 1st January 1956 for the contract was Rs. 80,000.

Further work certified during the year amounted to Rs. 2,20,000—75% of which was received.

Work done and not certified as on 31st December 1956 was valued at Rs. 15,000.

Special Plant is to be depreciated at 25% per annum on the original cost.

Materials on site were valued at Rs. 10,000.

The contract was completed on 30th of April 1957, upto which date the following further expenses were incurred:

	Rs.
Materials issued from stores	40,000
Materials charged direct	7,000
Wages	15,000
Direct Charges	1,350

The General Oncost each year is to be taken at 5 per cent of the amount of materials consumed and wages paid during the year. On 30th April 1957, the Plant was valued at Rs. 50,000. The materials at site were sold for Rs. 7,000, and those returned to stores amounted to Rs. 13,000.

Prepare Contract Account and Contractee's Account showing the results of the transactions, assuming that the balance due from the contractee was duly received.

Answer:

CONTRACT ACCOUNT (1955)

1955		Rs.	1955		Rs.
Dec. 31	To Materials ..	40,000	Dec. 31	By Work-in-Progress Account Transfer ..	65,000
,,	,, Wages ..	20,000			
,,	,, Direct Expenses ..	2,000			
,,	,, General Oncost ..	3,000			
	Rs.	65,000		Rs.	65,000

CONTRACT ACCOUNT (1956)

1956		Rs.	1956		Rs.
Jan. 1	To Work-in-Progress Transfer ..	65,000	Dec. 31	By Work-in-Progress Account—transfer:	
Dec. 31	„ Plant and Machinery ..	80,000		„ Plant and Machinery (Depreciated value) ..	60,000
„	„ Materials ..	90,000		„ Materials unconsumed ..	10,000
„	„ Wages ..	40,000		„ Work not certified ..	15,000
„	„ Direct Charges ..	4,000			
„	„ General Oncost ..	6,000			
					85,000
		2,85,000	„	„ Contractee's Account ..	3,00,000
„	„ Profit and Loss Account	75,000			
„	„ Work-in-Progress A/c. transfer ..	25,000			
	Rs.	3,85,000		Rs.	3,85,000

CONTRACT ACCOUNT (1957)

1957			Rs.	1957		Rs.
Jan. 1	To Work-in-Progress Account—Transfer:			Jan. 1	By Work-in-Progress A/c. transfer ..	25,000
	Plant (Depreciated value)	60,000		April 30	„ Plant & Machinery A/c. (Depreciated value) ..	50,000
	Materials unconsumed	10,000		„	„ Bank (Materials realised)	7,000
	Work not certified	15,000		„	„ Materials Account returned to stores ..	13,000
			85,000	„	„ Contractee's Account ..	1,00,000
Apr. 30	„ Materials Account ..		47,000			
„	„ Wages Account ..		15,000			
„	„ Direct Charges ..		1,350			
„	„ General Oncost ..		2,100			
„	„ Profit & Loss Account Profit transferred ..		44,550			
	Rs.		1,95,000		Rs.	1,95,000

CONTRACTEE'S PERSONAL ACCOUNT

		Rs.			Rs.
1955 Dec. 31	To Balance c/d. ..	60,000	1955 Dec. 31	By Bank ..	60,000
1956 Dec. 31	To Contract Account ..	3,00,000	1956 Jan. 1	By Balance b/d. ..	60,000
			Dec. 31	„ Bank ..	1,65,000
			„	„ Balance c/d. ..	75,000
	Rs.	3,00,000		Rs.	3,00,000
1957 Jan. 1	To Balance b/d. ..	75,000	1957 April 30	By Bank ..	1,75,000
April 30	„ Contract Account ..	1,00,000			
	Rs.	1,75,000		Rs.	1,75,000

Notes:

(a) No profit has been taken credit for in 1955, as only a very small portion of the contract was worked.

(b) As three-fourths of the Contract was certified in 1956, only three-fourths of the profit has been brought into credit, the balance being transferred to Work-in-Progress Account.

Q. 265.

From the following information, prepare Pig Iron Production Account showing cost per ton of each class of expenditure, and of the Pig Iron produced:

—	Coal	Coke	Limestone	Iron Ore	Sundries
	Rs.	Rs.	Rs.	Rs.	Rs.
Stock on 1st January 1957 ..	7,080	5,370	2,175	5,895	4,050
Purchases during the year ..	32,820	44,205	17,620	28,035	11,715
Stock on 31st December 1957 ..	5,400	3,075	2,295	5,430	4,515

The total production of Pig Iron amounted to 40,000 tons; sale of slag Rs. 10,500; General Working Charges Rs. 6,750; Wages Rs. 25,500.

Answer:

PIG IRON PRODUCTION ACCOUNT
(Output 40,000 Tons)

—		Cost per Ton	Total Cost	—	Cost per Ton	Total Cost
		Rs.	Rs.		Rs.	Rs.
To Coal Consumed	Rs.			By Sales of Slag ..	.2625	10,500
Stock 1-1-57	7,080			,, Cost of Production ..	4.0000	1,60,000
Purchases	32,820					
	39,900					
Less Stock 31-12-57	5,400	.86250	34,500			
,, Coke Consumed						
Stock 1-1-57	5,370					
Purchases	44,205					
	49,575					
Less Stock 31-12-57	3,075	1.16250	46,500			
,, Limestone Consumed .						
Stock 1-1-57	2,175					
Purchases	17,620					
	19,795					
Less Stock 31-12-57	2,295	.43750	17,500			
,, Iron Ore Consumed						
Stock 1-1-57	5,895					
Purchases	28,035					
	33,930					
Less Stock 31-12-57	5,430	.71250	28,500			
,, Sundries ·						
Stock 1-1-57	4,050					
Purchases	11,715					
	15,765					
Less Stock 31-12-57	4,515	.28125	11,250			
,, Wages	..	.63750	25,500			
,, General Charges	..	.16875	6,750			
	Rs.	4.2625	1,70,500	Rs.	4.2625	1,70,500

Q. 266.

Calculate the amount of wages and bonus earned by this worker:
Name: Ram Gopal
Ticket No. 578
Job commenced: Monday 18th March 1956, 8 a.m.
Job finished: Saturday, 23rd March 1956, 1 p.m.
Quantity of pieces of work given out: 638
Quantity of pieces of work passed: 600
Worker's rate: 8 annas per hour
Time allowed: 10 per hour
Bonus: 40% of time saved
Assume that the employee worked a 9-hour day and no overtime.

Answer :

Time allowed is 600 at 10 per hour	60 hours.
Time taken is	50 ,,
Time saved is	10 ,,
Bonus at 40% is	4 ,,
Therefore	
Wages 50 hours at Rs. 0–8–0 per hour	Rs. 25–0–0
Bonus 4 hours at Rs. 0–8–0 per hour	,, 2–0–0
Total amount payable	Rs. 27–0–0

Q. 267.

From the following particulars, prepare in comparative form the Cost Sheet and Working Account to three places of decimals, for the months of January and February 1957, the output of these months being 72,270 and 46,000 tons respectively:

	June 1957 Rs.	July 1957 Rs.
Wages, Underground	46,800	31,800
Wages, Colliers	1,17,000	75,000
Wages, Surface	27,000	16,800
Timber	11,700	7,500
Stores	5,400	3,300
Royalties	22,500	14,700
Horse and Stable expenses	7,200	4,500
Repairs and Renewals	7,560	5,100
Depreciation	13,140	8,400
Rent, Rates and Taxes	7,740	5,100
Salaries and Management	16,200	10,800
Bad Debts and Discount	3,600	2,100
Sundry Expenses	3,240	1,800

Answer :

COMPARATIVE COST SHEET

Cost per Ton	1957 January	—	Cost per Ton	1957 February	Cost per Ton	1957 January	—	Cost per Ton	1957 February
Rs.	Rs.	To Wages:	Rs.	Rs.	Rs.	Rs.	By Cost of Production:	Rs.	Rs.
.647	46,800	Underground ..	.691	31,800	4.000	2,89,080	72,270 tons at Rs. 4 per ton		
1.619	1,17,000	Colliers ..	1.630	75,000					
.374	27,000	Surface ..	.365	16,800			46,000 tons at Rs. 4.063 per ton ..	4.063	1,86,900
		,, Expenses of Production							
.162	11,700	Timber ..	.163	7,500					
.075	5,400	Stores ..	.072	3,300					
.311	22,560	Royalties ..	.319	14,700					
.099	7,200	Horse & Stable Expenses .	.098	4,500					
.105	7,560	Repairs & Renewals ..	.111	5,100					
.182	13,140	Depreciation ..	.183	8,400					
		,, Establishment Charges .							
.107	7,740	Rent, Rates & Taxes ..	.111	5,100					
.224	16,200	Salaries & Management ..	.235	10,800					
.050	3,600	Bad Debts & Discount ..	.046	2,100					
.045	3,240	Sundry Expenses ..	.039	1,800					
4.000	2,89,080	Rs.	4.063	1,86,900	4.000	2,89,080	Rs.	4.063	1,86,900

Q. 268.

Calculate the earnings of a worker under the (a) Rowan Premium Bonus System, and (b) Halsey Weir Premium Bonus System (50 per cent to worker), from the following particulars:

(1) Hourly rate of wages (Guaranteed) Re. 0-8-0.

(2) Standard Time for producing 1 dozen articles is 3 hours.

(3) Actual time taken by the worker to produce 20 dozen articles is 48 hours.

Answer :

(a) **Rowan Premium Plan:**

Hourly rate for time taken—48 hours at Re. 0–8–0 = Rs. 24–0–0

Time saved is 12 hours

Proportion of the standard time $\frac{12}{60}$

Premium $\frac{12}{60}$ of time taken .. .. = 9.6 hours

Total earnings (Rs. 24 + Rs. 4–12–9) .. = Rs. 28–12–9

(b) **Halsey Weir Premium Plan:**

Standard time for 20 dozen articles .. = 60 hours

Hourly rate of Wages .. = Re. 0–8–0

Actual Time taken .. = 48 hours

Worker will receive 48 hours' wages plus 50 per cent of the time saved by way of bonus, i.e. further 6 hours' wages

Total remuneration—54 hours at Re. 0–8–0 .. = Rs. 27–0–0

Q. 269.

The following particulars are drawn out from the Costing Books of a Contractor, for the month of December 1955:

			Rs.	Rs.
(1)	Stores Abstract:			
	Balance, 30th November	..	42,292	
	Purchases	..	8,720	
	From Job No. 101	..	684	
				51,696
	To Job No. 102	..		4,224
	Balance, 31st December 1955		Rs.	47,472
(2)	Wages Abstract:			
	Job No. 101	..	460	
	" " 102	..	5,752	
				6,212
	Establishment	..		512
			Rs.	6,724

On 30th November 1955, Jobs Nos. 101 and 102 showed the balances of Rs. 2,57,264 and Rs. 1,13,492 respectively.

A certificate of completion was obtained for Job No. 101; of the balance on this account standing on 30th November 1955, Rs. 49,200 was in respect of Plant and Machinery, the remainder consisting of wages and materials. A machine costing Rs. 4,400 specially bought for this contract was sold during December 1955 for Rs. 1,600. Of the remainder of the balance on Plant and Machinery, Rs. 32,000 worth had been utilised on the Job for eight months and the rest for six months. Of the former, half was transferred to Job No. 102 and the whole of the remaining plant was returned to Stores. The Contract price for Job No. 101 was fixed at Rs. 3,00,000.

Prepare Contract Accounts, and state the profit made on the Job certified as completed, allowing depreciation on Machinery at 15% per annum. Assume 10% for establishment charges on cost of wages and materials consumed.

Answer :

CONTRACT NO. 101

1955		Rs.	1955		Rs.
Dec. 1	To Balance b/fd. ..	2,57,264	Dec. 31	By Finished Contracts A/c : Contract price ..	3,00,000
" 31	" Wages ..	460	" "	" Stores Returned ..	684
" "	" Establishment charges : 10% on Rs. 2,07,840 ..	20,784	" "	" Proceeds, sale of Machine cost Rs. 4,400 ..	1,600
" "	" Profit and Loss A/c. ..	64,416	" "	" Contract No. 102 ..	14,400
			" "	" Stores ..	14,400
			" "	" Stores ..	11,840
	Rs.	3,42,924		Rs.	3,42,924

CONTRACT NO. 102

1955		Rs.	1955		Rs.
Dec. 1	To Balance b/fd. ..	1,13,492	Dec. 31	By Balance c/fd. ..	1,37,868
" 31	" Wages ..	5,752			
" "	" Stores ..	4,224			
" "	" Plant from Contract No. 101 ..	14,400			
	Rs.	1,37,868		Rs.	1,37,868
1956					
Jan. 1	To Balance b/fd. ..	1,37,868			

Notes:

(*a*) Establishment Charges on Contract 101 are arrived at as under:

			Rs.
Opening Balance to debit	..		2,57,264
Less: Cost of Special Plant	..		49,200
			2,08,064
Add: Further wages expended	..		460
			2,08,524
Less: Stores returned	..		684
Total Material & Wage Cost	=	Rs.	2,07,840
10% on the above	=	Rs.	20,784

(*b*) Plant Depreciation is arrived at as under:

Original Cost	..	49,200
Less: Cost of Machine sold	..	4,400
Balance of Plant used	Rs.	44,800
Depreciation on Rs. 32,000 for 8 months at 15%	Rs.	3,200
Depreciation on Rs. 12,800 for 6 months at 15%	Rs.	940

The depreciated value of plant cost Rs. 32,000 is Rs. 28,800 of which Rs. 14,400 is transferred to Contract 102, and Rs. 14,400 is transferred to Stores.

The depreciated value of plant cost Rs. 12,800 is Rs. 11,840 which is also transferred to Stores.

(*c*) The profit on work so far completed on Job No. 102 cannot be ascertained as the certified value of work done has not been given.

Q. 270

In a manufacturing Company, a daily wage rate guaranteed for a worker is Re. 1-14-0 and the standard output fixed for the month is 1,000 articles representing 100 per cent efficiency. The daily wage rate is paid without bonus to those workers who show upto 66⅔ per cent of the efficiency standard. Beyond this, there is a bonus payable on a graded scale in a fixed ratio to the increased output as under:

Efficiency	Bonus payable
90%	10%
100%	20%

Further increase of 1 per cent for every 1 per cent further rise of efficiency.

Find out the total earnings of four workers of A, B, C and D who have worked for 26 days in a month. Workers' output is A 500 articles, B 900 articles, C 1,000 articles and D 1,100 articles.

Answer :

STANDARD OUTPUT 1,000 ARTICLES

Workers	Output Articles	Efficiency	Bonus	Wages Earned		
				Wages	Plus	Bonus
				Rs. a. p.	Rs. a. p.	Rs. a. p.
A	500	50%	No bonus	48 12 0 +	nil =	48 12 0
B	900	90%	10%	48 12 0 +	4 14 0 =	53 10 0
C	1,000	100%	20%	48 12 0 +	9 12 0 =	58 8 0
D	1,100	110%	30%	48 12 0 +	14 10 0 =	63 6 0

Q. 271.

The weekly figures of the National Steel Works Ltd. for a production of 1,800 Tons showed as under:

	Tons	Rs.
Materials consumed:		
Pig Iron	1,395	1,11,600
Scrap	387	34,830
Iron Ore	180	6,300
Limestone	180	1,800
Coal	729	8,640
Sales of Scrap, Mill Cinders, etc. realised ..		8,300
Wages paid:		
Boilermen and Engineers		9,000
Smelting Furnaces and Gas Producers ..		22,500
Ladles and Casting Pits		13,500
Rolling Mills		13,500
Cranemen and Labourers		10,800
Locomotive Drivers		600
Yardmen		300
Works Expenses included .		
Sundry Stores consumed		1,800
Rents and Taxes of Works		2,250
Coal for Re-heating		2,700
Coal for Steam		6,750
Gas and Water		3,000
Electricity		4,200
Time-keepers and Store-clerks		450
Repairs and Renewals		2,700
Depreciation		4,500
Royalties		900
Establishment Expenses including Management, Salesmen, Office Salaries and General Establishment Charges		23,800

From the above information, you are required to prepare a Weekly Cost Sheet showing the Cost per Ton in Rs. As. and Ps. of each item of expenditure, and the Total Cost at Works and cost per Ton.

Answer:

THE NATIONAL STEEL WORKS LTD.
WEEKLY COST SHEET
(Production: 1,800 Tons)

Per Ton Steel Produced	—		Total	Per ton Produced		
Cwts.		Tons	Rs.	Rs.	a.	p.
	Materials:					
15.5	Pig Iron	1,395	1,11,600	62	0	0
4.3	Scrap	387	34,830	19	5	7
2.0	Iron Ore	180	6,300	3	8	0
2.0	Limestone	180	1,800	1	0	0
8.0	Coal	729	8,640	4	12	9
			1,63,170	90	10	4
	Less: Sales of Scrap, Mill Cinders, etc. ..	..	8,300	4	9	9
		Rs.	1,54,870	86	0	7
	Wages:					
	Boilermen and Engineers	..	9,000	5	0	0
	Smelting Furnaces and Gas Producers ..	..	22,500	12	8	0
	Ladles and Casting Pits	..	13,500	7	8	0
	Rolling Mills	..	13,500	7	8	0
	Cranemen and Labourers	..	10,800	6	0	0
	Locomotive Drivers	..	600	0	5	4
	Yardmen	..	300	0	2	8
	Prime Cost = Rs.		2,25,070	125	0	7
	Works Expenses:					
	Sundry Stores consumed . .	..	1,800	1	0	0
	Rents and Taxes of Works . ..	..	2,250	1	4	0
	Coal for Re-heating	..	2,700	1	8	0
	Coal for Steam	..	6,750	3	12	0
	Gas and Water	..	3,000	1	10	8
	Electricity	..	4,200	2	5	4
	Time-keepers and Store Clerks	..	450	0	4	0
	Repairs and Renewals	..	2,700	1	8	0
	Depreciation	..	4,500	2	8	0
	Royalties	..	900	0	8	0
	Works Cost = Rs.		2,54,320	141	4	7
	Establishment Expenses:					
	Management, Salesmen and Office Salaries and General Establishment Charges	..	23,800	13	3	7
	Total Cost at Works = Rs.		2,78,100	154	8	2

Q. 272.

Product A yields by-products B and C. The joint expenses of manufacture are:

	Rs.
Materials	11,200
Labour	9,500
Oncost	9,000
Rs.	29,700

Subsequent expenses are as follows:

	A	B	C
	Rs.	Rs.	Rs.
Materials	4,000	2,500	1,300
Labour	4,200	3,000	1,200
Oncost	4,400	2,000	1,000
Rs.	12,600	7,500	3,500
The Selling Prices are Rs.	51,000	21,000	10,000
The Estimated Profit on Sales is ..	40%	30%	20%

Show the manner in which you would apportion the joint expenses of manufacture.

Answer :

	A	B	C
	Rs.	Rs.	Rs.
Selling Prices	51,000	21,000	10,000
Less: Estimated Profit on Sales ..	20,400	6,300	2,000
	30,600	14,700	8,000
Less: Subsequent Expenses ..	12,600	7,500	3,500
Total Joint Expenses apportioned (Process No. 1)	18,000	7,200	4,500
Subsequent Expenses (Process No. 2) :			
Material	4,000	2,500	1,300
Labour	4,200	3,000	1,200
Oncost	4,400	2,000	1,000
Total Expenses of both processes Rs.	30,600	14,700	8,000

Notes:

The individual expenses in relation to material, labour and oncost included in the joint expenses applicable to each product can be apportioned in the same ratio as held good in the total joint expenses.

The apportionment will thus be made as under:

Total Joint Expenses : Joint Expense of A : Total Material Expense :
29,700 18,000 11,200
= Material Expense of A :
6,788

Product		Material	Labour	Oncost	Total
A	..	6,788	5,758	5,454	18,000
B	..	2,715	2,303	2,182	7,200
C	..	1,697	1,439	1,364	4,500
	Rs.	11,200	9,500	9,000	29,700

Q. 273.

The following particulars relate to certain contracts carried out by a firm of Engineers during the month of December 1954:

	Rs.
Direct Wages paid during the month on Work-in-Progress	16,000
Materials used as per Materials Day Book ..	14,750
Materials charged direct	7,000
Direct Payments for Materials	1,525
Cost of completed work as per Sales Journal :	
Time	14,750
Materials	17,000
Cost of Time and Materials on Finished Stock :	
Time	4,500
Materials	7,650
Additions to Plant :	
Time	1,100
Materials	650
Patterns :	
Time	1,225
Materials	375
Unchargeable :	
Time	950
Materials	50
Uncompleted work for customers at close of month :	
Time	4,975
Materials	7,050
Time and Materials on Work-in-Progress at beginning of month as shown by Cost Ledger :	
Time	11,500
Materials	9,500

Write up the Work-in-Progress Account.

Answer:

WORK-IN-PROGRESS ACCOUNT

—	Labour	Materials	Total	—	Labour	Materials	Total
	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.
Balance b/fd. ..	11,500	9,500	21,000	By Completed Contracts ..	14,750	17,000	31,750
Direct Wages ..	16,000		16,000	„ Amounts transferred to:			
Materials (Stores) ..		14,750	14,750	Finished Stock	4,500	7,650	12,150
Materials (Direct) ..		7,000	7,000	Plant ..	1,100	650	1,750
Materials (Cash) ..		1,525	1,525	Patterns ..	1,225	375	1,600
				Oncost, not directly chargeable ..	950	50	1,000
				By Balance c/d. ..	4,975	7,050	12,025
Rs.	27,500	32,775	60,275	Rs.	27,500	32,775	60,275
To Balance b/d. ..	4,975	7,050	12,025				

Note: Unchargeable items may represent such stores as Oil, Grease, etc., and Labour unallocated or indirect Labour; both these items must therefore be taken into account when charging Works Oncost

Q. 274.

The account of Raw Materials appears in the Stores Ledger of a manufacturing concern as under:

		Quantity	Cost		Amount			Quantity	Cost		Amount
1957			Rs.	a.	Rs.	1957			Rs.	a.	Rs.
Jan. 1	Stock	2,000	2	0	4,000	Jan. 26	Issues	4,400	2	0	8,800
„ 20	Received	4,200	2	4	9,450	Feb. 26	„	3,800	2	4	8,550
Feb. 10	„	3,600	2	6	8,550	Mar. 23	„	4,200	2	6	9,975
Mar. 12	„	500	2	8	1,250		Balance	600	5	9¼	3,350
„ 16	„	2,700	2	12	7,425						
		13,000			30,675			13,000			30,675

The practice has been to price the issues at the average cost price of the preceding month. Upon preparation of the annual accounts, the valuation of stock in hand is adjusted in accordance with the usual principle. State whether in your opinion, the method adopted in preparation of costing statements is correct, and, if not, what modifications you would suggest. You are required to recast the account accordingly.

Answer :

		Quantity	Price	Amount			Quantity	Price	Amount
1957			Rs. a.	Rs.	1957			Rs. a.	Rs.
Jan. 1	Bal. b/fd.	2,000	2 0	4,000	Jan. 26	Issues	2,000	2 0	4,000
" 20	Received	4,200	2 4	9,450		"	2,400	2 4	5,400
Feb. 10	"	3,600	2 6	8,550	Feb. 26	"	1,800	2 4	4,050
Mar. 12	"	500	2 8	1,250		"	2,000	2 6	4,750
" 16	"	2,700	2 12	7,425	Mar. 23	"	1,600	2 6	3,800
						"	500	2 8	1,250
						"	2,100	2 12	5,775
						Bal. c/d.	600	2 12	1,650
		13,000	Rs.	30,675			13,000	Rs.	30,675
Mar. 16	Bal. b/d.	600	2 12	1,650					

The method adopted in the question, regarding issues, is hardly desirable, as current prices are likely to fluctuate considerably. As the receipts are few in number, it would be preferable to charge out the issues to jobs or contracts on the principle of " First in, first out ". This is the principle followed in working out the above Account. Stock at the close of the accounting period must be valued at cost or market price whichever is the lower. Marking issues at average price of stores in hand is likely to involve fresh calculations and adjustments practically every month, and on these grounds alone it would not be advisable to charge them at average price. Besides, if fractions are ignored in calculating amounts, it would give rise to a difference on the Stores Account.

Q. 275.

In some industries, a certain percentage of defective products is a normal factor. In the case of 10,000 articles being manufactured at a cost of Rs. 80,000 of which Rs. 50,000 is Wages and Indirect Charges and Rs. 30,000 is Material, 1,500 articles turn out defective, their only value being in the used metal of which they are composed, amounting to Rs. 1,500. What is the unit cost of the saleable products, in total, and in Wages, Indirect Charges, and Materials respectively?

Answer :

Output, 8,500			Cost per unit of Saleble articles
	Rs.	Rs.	Rs. a. p.
Materials	30,000		
Less : Metal in defective Articles ..	1,500	28,500	3 5 7.76
Wages and Indirect charges		50,000	5 14 1.41
Total Cost Rs.		78,500	Rs. 9 3 9.17

Q. 276.

The following information relates to the printing of 5,000 copies of the work "Now or Never":

	Rs.	Rs.
Expenses of Printing:		
Materials :		
Paper	3,100	
Ink	415	
Wages :		
Compositors	1,750	
Proof-readers	325	
Printers	670	
		6,260
Expenses of Binding:		
Materials :		
Leather	724	
Cloth	408	
Boards	515	
Gold	212	
Sundries	145	
	2,004	
Wages :		
Cutting	25	
Folding	40	
Sewing	65	
Binding	135	
Finishing	55	
		2,324

The Works Oncost of the Printing Department, is estimated at 40% of the total printing charges, and of the Binding Department, at 25% on the total binding charges.

The General Establishment Oncost works out at 12½% on the total Works Cost.

You are required to prepare a Cost Sheet and find out the cost per each book.

Answer:

COST SHEET OF PRINTER AND PUBLISHER

Order No .. . Date of Completion ....

(5,000 Copies of " Now or Never ")

Particulars	Departmental Details	Departmental Details	Grand Total		
	Rs.	Rs.	Rs.	a.	p.
Printing Department.					
Materials—					
Paper	3,100				
Ink	415				
		3,515			
Labour—					
Compositors	1,750				
Proof-Readers	325				
Printers	670				
		2,745			
Works Oncost: at 40% on Rs. 6,260		2,504			
			8,764	0	0
Binding Department:					
Materials—					
Leather	724				
Cloth	408				
Boards	515				
Endleaves	..				
Gold	212				
Sundries	145				
		2,004			
Labour—					
Cutting	25				
Folding	40				
Sewing	65				
Binding	135				
Finishing	55				
		320			
Works Oncost: at 25% on Rs. 2,324		581			
			2,905	0	0
Cost of Production =			11,669	0	0
General Establishment Oncost: 12½% on Works Cost, i.e., Rs. 11,669-4-0			1,458	10	0
Total Cost =		Rs.	13,127	10	0
Cost per Unit =	2-10-0				

Q. 277.

Two fitters, a labourer and a boy undertake to work 400 articles on a piecework basis for Rs. 3,300. The time spent by each of them is 300 ordinary working hours, and the rates of pay are for the two fitters Rs. 3 each per hour, for the labourer Re. 1-8 per hour, and the boy 12 annas per hour.

Ascertain the amount of the piecework premium, and show the amount of it each worker will receive when it is divided proportionately to the wages paid, and show in each case the percentage the premium bears to the wage payments at ordinary rates.

To the amount paid for working up, add cost of Material Rs. 13,600, proportion of "Oncost" Rs. 1,950, of selling expenses Rs. 1,250 and for Carriage Charges Rs. 800, and give the total Cost.

To return the manufacturer 20% on the total cost, at what price must he sell, and what will be the profit reckoned on the selling price?

Answer:

——	Rate			Wages for 300 hours			Proportion of total Wages	Premium			% age of Premium to Wages
	Rs.	a.	p.	Rs.	a.	p.		Rs.	a.	p.	
1st Fitter ..	3	0	0	900	0	0	4/11	300	0	0	33.33
2nd Fitter ..	3	0	0	900	0	0	4/11	300	0	0	33.33
Labourer ..	1	8	0	450	0	0	2/11	150	0	0	33.33
Boy ..	0	12	0	225	0	0	1/11	75	0	0	33.33
Total Wages ..				2,475	0	0		825	0	0	
Premium ..				825	0	0					
Piece Work Price Rs.				3,300	0	0					

	Rs.
Wages	3,300
Materials	13,600
Oncost	1,950
Selling Expenses	1,250
Carriage	800
Total Cost	20,900
20% Profit on Cost	4,180
Selling Price	25,080

Profit reckoned on selling price=16⅔%.

Q. 278.

From the following figures, prepare a Cost Sheet of the National Colliery for the week ended 31st March 1957:

	Rs.	Rs.
Working Expenses:		
Timber	375	
Stores, underground	625	
Stores, Surface	495	
Power	290	
Repairs & Renewals	710	
Royalties	1,000	
Rent	200	
Depreciation	730	
General Charges	345	
		4,770
Surface Wages:		
Weighmen & Banksmen	545	
Screeners & Loaders	615	
Joiners	150	
Fitters, Smiths	300	
Pumping Station	465	
Weigh-house	350	
General Labour	400	
		2,825
Underground Wages:		
Coal-getting	4,000	
Boring	435	
Shot-firing	250	
Timbering	530	
Ripping & Packing	450	
Masons & Labourers	360	
Haulage	355	
Stable-work	260	
General Labour	390	
		7,030
Establishment Expenses:		
Management Salaries	970	
Office Salaries	675	
Commission	1,075	
Travelling Expenses	340	
Insurance	245	
Bad Debts & Discounts	775	
General Charges	320	
		4,400
Distribution Expenses:		
Truck Hire	1,725	
Carriage	3,250	
		4,975

The total Output during the week was Tons 2,000.

Answer :

COLLIERY COST SHEET

Week ended ....

(Output: Tons Raised 2,000)

—	Amount	Total	Amount per Ton	Cost per Ton
	Rs.	Rs.	Rs. a. p.	Rs. a. p.
Underground Wages :				
Coal Getting	4,000		2 0 0	
Boring	435		0 3 6	
Shot firing	250		0 2 0	
Timbering	530		0 4 3	
Ripping & Packing	450		0 3 7	
Masons & Labourers	360		0 2 11	
Haulage	355		0 2 10	
Stable Work	260		0 2 1	
General Labour	390		0 3 1	
		7,030		3 8 3
Surface Wages :				
Weighmen & Banksmen	545		0 4 4	
Screeners & Loaders	615		0 4 11	
Joiners	150		0 1 2	
Fitters, Smiths	300		0 2 5	
Pumping Station	465		0 3 9	
Weigh-house	350		0 2 10	
General Labour	400		0 3 2	
		2,825		1 6 7
Working Expenses :				
Timber	375		0 3 0	
Stores, Underground	625		0 5 0	
Stores, Surface	495		0 4 0	
Power	290		0 2 4	
Repairs & Renewals	710		0 5 8	
Royalties	1,000		0 8 0	
Rent	200		0 1 7	
Depreciation	730		0 5 10	
General Charges	345		0 2 9	
		4,770		2 6 2
Establishment Expenses :				
Management Salaries	970		0 7 9	
Office Salaries	675		0 5 5	
Commission	1,075		0 8 7	
Travelling Expenses	340		0 2 9	
Insurance	245		0 1 11	
Bad Debts & Discounts	775		0 6 2	
General Charges	320		0 2 7	
		4,400		2 3 2
Distribution Expenses :				
Truck Hire	1,725		0 13 10	
Carriage	3,250		1 10 0	
		4,975		2 7 10
Total Cost	Rs.	24,000	Rs.	12 0 0

Note: An additional column may be added at the right-hand end to indicate the cost per ton of the previous week for comparison.

Q. 279.

The elements comprising the cost of a factory output for the three years 1955, 1956 and 1957 were as under:

	Rs.	Rs.	Rs.
Materials	1,50,000	1,12,500	1,87,500
Labour	67,000	65,000	69,000
Works Oncost & Power	30,000	22,000	37,500
Administration Cost	18,000	18,000	18,000
Selling and Distribution Costs	9,000	7,000	5,000
	Tons	Tons	Tons
Output	10,000	7,500	12,500

Following an examination of the figures, you are required to state on what basis you would allocate Oncost in quoting for a contract to supply 17,500 tons of the commodity representing the whole of the anticipated output for the year 1958.

What price would you quote, assuming there was no change in the organisation and that a profit of 15% on Works Cost is considered adequate?

Answer :

From the given figures it will be seen that Works Expenses (i.e. Works Oncost and Power) represent 20% of the cost of materials consumed during the years 1955, 1956 and 1957.

The output too has varied in proportion of materials consumed. In each of the three years, for every ton of output, materials worth Rs. 15 have been consumed. In 1955, 1956 and 1957, Works Expenses were 45%, 35% and 54% of Labour Cost and 14%, 13% and 15% respectively of Prime Cost.

The above analysis and comparison disclose the fact that Works Expenses appear to vary directly with the cost of materials consumed. It is therefore advisable to allocate Works Oncost on basis of materials consumed rather than on basis of Labour or Prime Cost.

The figures for Administration Oncost for 1955, 1956 and 1957 have remained constant despite the increase or decrease in output. It is, therefore, assumed that they will remain the same in the year 1958.

Though there has been a decrease or an increase in output, the Selling and Distribution Costs have decreased each year. It is, therefore, assumed that they will show a decrease in 1958 also.

QUOTATION FOR A CONTRACT TO SUPPLY 17,500 TONS OF COMMODITY

	Rs.
Raw Materials at Rs. 15 per ton	2,62,500
Labour	73,000
Works Oncost and Power—20% on materials consumed	52,500
Works Cost Rs.	3,88,000
Administrative Cost	18,000
Selling and Distribution Cost (say)	3,000
Profit of 15% on Works Cost	58,200
Rs.	4,67,200

In the case of Labour, for every increase or decrease of Rs. 37,500 in materials, there has been a corresponding increase or decrease in Labour Cost of Rs. 2,000, and hence the figure of Rs. 73,000 for Labour in the above quotation.

The above quotation may be considered as satisfactory provided there are no likely changes in the price of raw materials and labour cost, and that there will be no immediate change in the organisation as would affect the Works and Administrative Oncosts.

Q. 280.

The Crown Contractors Ltd. undertook a contract for Rs. 3,50,000 on 1st June 1955. The following transactions took place upto 31st December of that year:

Materials issued from stores cost Rs. 35,000 and materials specially purchased cost Rs. 4,500. Wages amounted to Rs. 22,500 and carriage and cartage to Rs. 3,700. The amount of work certified was Rs. 80,000 of which the contractor received 80 per cent in cash.

The transactions for the year 1956 showed as under:

Materials issued from Stores Rs. 72,000; Wages, Rs. 48,000; Direct Charges, Rs. 5,200; and Special Plant purchased on 1st July 1956 Rs. 60,000. Further work certified during the year amounted to Rs. 1,95,000, 80 per cent of which was received. Work done and not certified at the end of the year was estimated at Rs. 17,000. Special Plant is to be depreciated at 20 per cent per annum on the original cost. Materials on site were valued at Rs. 10,200.

The contract was certified as completed on 30th June 1957, upto which date the following further expenses were incurred: Materials from Stores Rs. 27,000, Wages Rs. 15,700, and Direct Charges Rs. 1,200.

The General Oncost each year is to be taken at 5 per cent of the amount of materials and wages consumed during the year. On 30th June 1957, the Plant was valued at Rs. 40,000 and transferred to the works. Materials and stores at site were sold for Rs. 1,600 and those returned to the Stores amounted to Rs. 8,600.

Pass the necessary Journal Entries, and show the Contract Account, Work-in-Progress Account, and Contractee's Account in each year's Books.

Answer :

JOURNAL ENTRIES

		L.F.	Rs.	Rs.
1955 Dec. 31	Contract Account .. .. .. Dr.		65,700	
	To Materials Account			39,500
	,, Wages Account			22,500
	,, Direct Charges Account			3,700
	(Being the materials supplied and the wages and direct charges expended during the year.)			
,, ,,	Bank Account .. .. .. Dr.		64,000	
	To Contractee's Personal Account			64,000
	(Being 80% of the Architect's Certificates received in cash.)			
,, ,,	Contract Account .. .. .. Dr.		3,100	
	To General Oncost Account			3,100
	(Being 5% on materials and wages expended during the year, viz. Rs. 62,000.)			
,, ,,	Work-in-Progress Account .. .. Dr.		68,800	
	To Contract Account			68,800
	(Being the transfer of the debit balance on Contract Account to Work-in-Progress Account.)			
1956 Jan. 1	Contract Account .. .. .. Dr.		68,800	
	To Work-in-Progress Account			68,800
	(Being the above entry reversed at the commencement of the year.)			
July 1	Contract Account .. . .. Dr.		60,000	
	To Plant and Machinery A/c.			60,000
	(Being the cost of specific Plant purchased for use on the Contract.)			
Dec. 31	Contract Account .. .. .. Dr.		1,25,200	
	To Materials Account			72,000
	,, Wages Account			48,000
	,, Direct Charges Account			5,200
	(Being the cost of materials supplied from stores, and the wages and direct charges during the year.)			
,, ,,	Bank Account .. .. .. Dr.		1,56,000	
	Contractee's Personal Account			1,56,000
	(Being 80% of the Architect's Certificates received in cash.)			
,, ,,	Contract Account .. .. .. Dr.		5,490	
	To General Oncost Account			5,490
	(Being 5% on materials and wages expended during the year, viz., on Rs. 1,20,000 *less* Rs. 10,200 materials unconsumed.)			

JOURNAL ENTRIES—(*Contd.*)

		L.F.	Rs.	Rs.
Dec. 31	Work-in-Progress Account .. .. Dr. To Contract Account (Being the valuation of the Plant for carrying forward to next year's books, after writing off half-year's depreciation at 20%.)		54,000	54,000
„ „	Work-in-Progress Account .. .. Dr. To Contract Account (Being the value of unconsumed materials transferred in order to ascertain profit on work done.)		10,200	10,200
„ „	Contractee's Personal Account .. .. Dr. To Contract Account (Being the total value of the Certificate received to date.)		2,75,000	2,75,000
„ „	Work-in-Progress Account .. .. Dr. To Contract Account (Being the estimated value of work done and not certified.)		17,000	17,000
„ „	Contract Account .. .. .. Dr. To Profit and Loss Account „ Work-in-Progress Account (Being three-fourths of the profits brought into credit and one-fourth carried forward.)		96,710	72,532/8 24,177/8
1957 Jan. 1	Contract Account .. .. .. Dr. To Work-in-Progress Account (Being the transfer of debit balances from last year to Contract Account:— Rs. Depreciated Plant .. 54,000 Unconsumed Materials .. 10,200 Work not certified .. 17,000 Rs. 81,200.)		81,200	81,200
„ „	Work-in-Progress Account .. .. Dr. To Contract Account (Being transfer of Profit not taken credit for last year.)		24,177/8	24,177/8
June 30	Contract Account .. .. .. Dr. To Materials Account „ Wages Account „ Direct Charges Account (Being further materials, wages and direct charges expended.)		43,900	27,000 15,700 1,200
„ „	Contract Account .. .. .. Dr. To General Oncost (Being 5% of materials and wages consumed, viz., on Rs. 42,7000.)		2,135	2,135
„ „	Plant and Machinery Account .. .. Dr. To Contract Account (Being the transfer of special plant to the works after revaluation.)		40,000	40,000
„ „	Bank Account .. .. .. Dr. To Contract Account (Being amount realised on sale of materials.)		1,600	1,600

JOURNAL ENTRIES—(*Contd.*)

		L.F.	Rs.	Rs.
June 30	Materials Account .. .. .. Dr. To Contract Account (Being transfer of materials to stores.)		8,600	8,600
„ „	Contractee's Personal Account .. .. Dr. To Contract Account (Being the balance of Certificates received making up the full Contract certified to Rs. 3,50,000.)		75,000	75,000
„ „	Contract Account .. . . Dr. To Profit & Loss Account (Being the net profit transferred.)		22,142/8	22,142/8
„ „	Bank Account .. .. .. Dr. To Contractee's personal Account (Being recovery of the balance from the Contractee.)		1,30,000	1,30,000

CONTRACT ACCOUNT (1955)

1955		Rs.	1955		Rs.
Dec. 31	To Materials ..	39,500	Dec. 31	By Work-in-Progress—Transfer ..	68,800
	„ Wages ..	22,500			
	„ Direct Expenses .	3,700			
	„ General Oncost ..	3,100			
	Rs.	68,800		Rs.	68,800

CONTRACT ACCOUNT (1956)

1956		Rs.	1956		Rs.
Jan. 1	To Work-in-Progress—Transfer (balance from last year) .	68,800	Dec. 31	By Work-in-Progress A/c.—Transfer Plant (depreciated value)	54,000
July 1	„ Plant & Machinery ..	60,000	„ „	„ Unconsumed Materials ..	10,200
Dec. 31	„ Materials ..	72,000	„ „	„ Work not certified ..	17,000
„ „	„ Wages	48,000			81,200
„ „	„ Direct Charges ..	5,200	„ „	„ Contractee's Personal A/c. ..	2,75,000
„ „	„ General Oncost ..	5,490			
		2,59,490			
„ „	„ Profit & Loss A/c. ..	72,532–8			
„ „	„ Work-in-Progress ..	24,177–8			
	Rs.	3,56,200–0		Rs.	3,56,200–0

CONTRACT ACCOUNT (1957)

1957		Rs.	1957		Rs
Jan. 1	To Work-in-Progress A/c.— Transfer depreciated Plant . 54,000 Unconsumed Material .. 10,200 Work not certified 17,000	81,200	Jan. 1	By Work-in-Progress A/c. —Transfer Profit ..	24,177-8
June 30	,, Materials A/c	27,000	June 30	,, Plant & Machinery A/c. ..	40,000
,, ,,	,, Wages A/c.	15,700	,, ,,	,, Bank (Materials realised)	1,600
,, ,,	,, Direct Charges A/c	1,200	,, ,,	,, Materials A/c. (Materials transferred to Stores) ..	8,600
,, ,,	,, General Oncost A/c	2,135	,, ,,	,, Contractee's A/c .	75,000
,, ,,	,, Profit & Loss A/c — Profit transferred	22,142-8			
	Rs	1,49,377-8		Rs.	1,49,377-8

WORK IN PROGRESS ACCOUNT (1955)

1955		Rs.	1956		Rs
Dec 31	To Contract A/c —Transfer	68,800	Jan 1	By Contract A/c.—Transfer	68,800

WORK IN PROGRESS ACCOUNT (1956)

1956		Rs	1956		Rs
Dec. 31	To Contract A/c (Depreciated Plant)	54,000	Dec. 31	By Contract A/c. (Profit carried over) ..	24,177-8
,, ,,	,, Unconsumed Material	10,200	,, ,,	,, Balance c/fd	57,022-8
,, ,,	,, Work not certified	17,000			
	Rs	81,200		Rs	81,200

WORK IN PROGRESS ACCOUNT (1957)

1957		Rs.	1957		Rs
Jan. 1	To Balance b/fd.	57,022-8	Jan. 1	By Contract A/c —Transfer Depreciated Plant ..	54,000
,, ,,	,, Contract A/c —Transfer (Profit carried over)	24,177-8	,, ,,	,, Unconsumed Material ..	10,200
			,, ,,	,, Work not certified ..	17,000
	Rs.	81,200		Rs.	81,200

CONTRACTEE'S PERSONAL ACCOUNT

19		Rs.	19		Rs.
Dec. 31	To Balance c/d. ..	64,000	Dec. 31	By Bank ..	64,000
19 Dec. 31	To Contract A/c. ..	2,75,000	19 Jan. 1	By Balance b/d. ..	64,000
			Dec. 31	„ Bank ..	1,56,000
			„ „	„ Balance c/d. ..	55,000
	Rs.	2,75,000		Rs.	2,75,000
19 Jan. 1	To Balance b/d. ..	55,000	19 June 30	By Bank ..	1,30,000
June 30	„ Contract A/c. ..	75,000			
	Rs.	1,30,000		Rs.	1,30,000

Note No profit is brought into account in the first year, as hardly one-fifth of the contract was worked. In the second year, as more than three-fourths of the work was completed, three-fourths of the profit has been credited to Profit & Loss Account and one-fourth has been carried to the next year as a provision against contingencies.

Q. 281.

A firm manufactures a standard article in three qualities, of which they produced during the year ending on 30th June 1955:

1,500 articles of quality A.
1,250 articles of quality B.
750 articles of quality C.

The stocks of Finished Goods at 1st July 1954 were: Quality A 300 articles; Quality B 200 articles; Quality C 100 articles.

Sales during the year 1955 were:

Quality A 1,750 articles at Rs. 112-8-0
Quality B 1,300 articles at Rs. 90-0-0
Quality C 750 articles at Rs. 75-0-0

The following figures, in respect of the year, were extracted from the books of accounts:

	Rs.
Work-in-Progress at 1st July 1954 . .	27,000
Work-in-Progress at 30th June 1955	10,700
Cost of Raw Materials used in manufacture ..	51,000
Cost of Stores used in manufacture	9,500
Manufacturing Wages	1,10,000
Depreciation (Works)	14,500
Works Oncost	23,700

From the above particulars, prepare Manufacturing and Trading Account for the year, showing the amount of Gross Profit carried to Profit and Loss Account, assume that the rate per cent of Gross Profit is the same for all the three kinds of articles.

Answer :

MANUFACTURING & TRADING ACCOUNT FOR THE YEAR ENDING 30th JUNE 1955

		Rs.			Rs.
To Work-in-Progress	..	27,000	By Cost of Production :	Rs.	
„ Raw Materials used	..	51,000	Quality "A"	..1,12,500	
„ Stores consumed	..	9,500	„ "B"	.. 75,000	
„ Manufacturing Wages	..	1,10,000	„ "C"	.. 37,500	
„ Depreciation (Works)	..	14,500			2,25,000
„ Works Oncost	..	23,700	„ Work-in-Progress	..	10,700
	Rs.	2,35,700		Rs.	2,35,700
To Stock—1-7-54 :			By Sales :		
A 300 at Rs. 75	.. 22,500		A 1,750 at Rs. 112/8	..1,96,875	
B 200 at Rs. 60	.. 12,000		B 1,300 at Rs. 90	..1,17,000	
C 100 at Rs. 50	.. 5,000		C 750 at Rs. 75	.. 56,250	
		39,500			3,70,125
„ Production :			„ Stock—30-6-55 :		
A 1,500	..1,12,500		A 50 at Rs. 75	.. 3,750	
B 1,250	.. 75,000		B 150 at Rs. 60	.. 9,000	
C 750	.. 37,000		C 100 at Rs. 50	.. 5,000	
		2,25,000			
„ Gross Profit 33⅓%	..	1,23,375			17,750
	Rs.	3,87,875		Rs.	3,87,875

Notes :—(1) As the rate per cent of Gross Profit is the same in the case of all three qualities, the cost of Production must be in direct proportion to Selling Price of the Articles produced, i.e. A 1,500 × 112-8 = Rs. 1,68,750; B 1,250 × 90 = Rs. 1,12,500; C 750 × 75 = Rs. 56,250.

$$A \quad \frac{1,68,750}{3,37,500} \times 2,25,000 = 1,12,500$$

$$B \quad \frac{1,12,500}{3,37,500} \times 2,25,000 = 75,000$$

$$C \quad \frac{56,250}{3,37,500} \times 2,25,000 = 37,500$$

(2) In the absence of necessary figures, it is assumed that the cost of production in the previous year was the same per article.

(3) The Gross Profit per quality is :

			Rs.
A 1,750 (112-8 — 75)	= 1,750 × 37-8	=	65,625
B 1,300 (90 — 60)	= 1,300 × 30	=	39,000
C 750 (75 — 50)	= 750 × 25	=	18,750
	Total Rs.		1,23,375

Q. 282.

From the following information, pass the necessary entries to control the Stores Ledger independently. It is assumed that a " General Cost Ledger Control A/c." is opened in the Stores Ledger, and a " Stores Ledger Control A/c." in the General Cost Ledger, for this purpose. The stock of stores at the commencement of the period was Rs. 40,100.

Transactions for the month were:

		Rs.
1.	Materials purchased during the month ..	45,000
2.	Materials issued to the production depts. ..	37,500
3.	Indirect Materials to non-productive services ..	11,750
4.	Materials returned to suppliers ..	1,200
5.	Materials returned from Jobs to Stores ..	2,575
6.	Materials transferred from Job to Job ..	2,000

Show also how the accounts concerned will appear.

Answer :

JOURNAL ENTRIES

		L.F.	Rs.	Rs.
1.	Stores Ledger Control Account .. .. Dr. (in the General Cost Ledger) To General Cost Ledger Control Account (in the Stores Ledger) (Being the value of materials purchased during the month.)		45,000	45,000
2.	General Cost Ledger Control Account .. .. Dr. (in the Stores Ledger) To Stores Ledger Control Account (in the General Cost Ledger) (Being the value of materials issued to the jobs or depts. during the month.)		37,500	37,500
3.	General Cost Ledger Control Account .. .. Dr. To Stores Ledger Control Account (Being the value of indirect materials issued to non-productive services.)		11,750	11,750
4.	General Cost Ledger Control Account .. .. Dr. To Stores Ledger Control Account (Being the value of materials returned to suppliers from Stores.)		1,200	1,200
5.	Stores Ledger Control Account .. .. Dr. To General Cost Ledger Control Account (Being the value of materials returned from jobs or depts. to Stores.)		2,575	2,575

6. Transfers of materials from one job to another will not require any Entry as they will not affect the balance of stores.

The Ledger Accounts concerned will appear as follows:

STORES LEDGER CONTROL ACCOUNT

(In the General Cost Ledger)

	Rs.		Rs.
To Balance b/d.—		By Issues to Production ..	37,500
Stock at commencement ..	40,100	„ Issues to Non-productive services	11,750
„ Purchases ..	45,000	„ Returns to Suppliers ..	1,200
„ Returns from jobs ..	2,575	„ Balance—Stock at end c/fd. ..	37,225
Rs.	87,675	Rs.	87,675
To Balance b/fd. ..	37,225		

GENERAL COST LEDGER CONTROL ACCOUNT

(In the Stores Ledger)

	Rs.		Rs.
To Issues to Production ..	37,500	By Balance—	
„ Issues to Non-productive services..	11,750	Stock at commencement b/fd.	40,100
„ Returns to Suppliers ..	1,200	„ Purchases ..	45,000
„ Balance—Stock at end c/fd. ..	37,225	„ Returns from jobs ..	2,575
Rs.	87,675	Rs.	87,675
		By Balance b/fd. ..	37,225

Note: In practice, separate Control Accounts are maintained for Direct and Indirect Materials

Q. 283.

The IXL Products Ltd. manufacture and sell their chemicals produced by consecutive processes.

The Products of the three processes are dealt with as under:

	Process 1	Process 2	Process 3
Transferred to next process ..	$66\frac{2}{3}\%$	60%	
Transferred to warehouse for sale	$33\frac{1}{3}\%$	40%	100%

In each process, 4 per cent of the total weight put in is lost and 6 per cent is scrap, which from process (1) realises Rs. 3 per ton, from process (2) Rs. 5 per ton and from process (3) Rs. 6 per ton.

The following particulars relate to October 1955:

Raw materials used.—

Process (1) 1,400 tons at Rs. 10 per ton.
„ (2) 160 tons at Rs. 16 per ton.
„ (3) 1,260 tons at Rs. 7 per ton.

Manufacturing Wages and Expenses—

Process (1) Rs. 5,152.
„ (2) Rs. 3,140.
„ (3) Rs. 2,895.

Prepare Process Accounts showing the cost per ton of each product.

PROCESS 1

	Tons	Rs.		Tons	Rs.
To Raw Materials ..	1,400	14,000	By Loss of weight ..	56	
„ Manufacturing Wages and Expenses ..		5,152	„ Scrap ..	84	252
			„ Warehouse ..	420	6,300
			„ Transferred to Process 2 at Rs. 15 per ton ..	840	12,600
	1,400	Rs. 19,152		1,400	Rs. 19,152

PROCESS 2

	Tons	Rs.		Tons	Rs.
To Raw Materials ..	160	2,560	By Loss of weight .	40	
„ Transferred from Process 1	840	12,600	„ Scrap ..	60	300
„ Wages and Expenses ..		3,140	„ Warehouse ..	360	7,200
			„ Transferred to Process 3 at Rs 20 per ton .	540	10,800
	1,000	Rs. 18,300		1,000	Rs. 18,300

PROCESS

	Tons	Rs		Tons	Rs.
To Raw Materials ..	1,200	8,820	By Loss of weight .	72	
„ Transferred from Process 2	540	10,800	„ Scrap ..	108	648
„ Manufacturing Wages and Expenses ..		2,895	„ Warehouse at Rs. 13/8 per ton ..	1,620	21,870
	1,800	Rs. 22,515		1,800	Rs. 22,518

Q. 284.

From the following particulars prepare Stores Ledger Control Account in Cost Ledger:

	Rs.
Cost of Stores at the commencement .. .	4,582
Sale of Scrap and Wastage ..	120
Sale of Stores . . .	360
Stores purchased	8,729
Stores destroyed by fire	260
Stores used in manufacture of tools	525
Stores charged to contracts . ..	7,380
Materials returned from Stores to suppliers .	1,200
Cost of stores sold	300
Appreciation in value of stores .	750
Estimated cost of scrap and wastage sold	490

Answer:

IN COST LEDGER
STORES LEDGER CONTROL ACCOUNT

	Rs.		Rs.
To Balance b/fd. ..	4,582	By Works-in-Progress— Stores charged to Contracts ..	7,380
„ Cost Ledger Control A/c.— Purchases ..	8,729	„ Cost Ledger Control A/c.— Returns to Suppliers ..	1,200
„ Cost Ledger Control A/c.— Profit on Sales ..	60	„ Cost Ledger Control A/c.— Sale of Scrap ..	120
		„ Cost Ledger Control A/c.—Sale ..	360
		„ Cost Ledger Control A/c.— Loss by fire ..	260
		„ Works Expenses— Manufacture of Tools ..	525
		„ Balance c/d. ..	3,526
Rs.	13,371	Rs.	13,371
To Balance b/d. ..	3,526		

Notes: (1) It is assumed that the wastage of materials is normal and that this has been allowed for in the price at which stores were charged out to jobs. Only the proceeds of the sale of scrap have therefore been considered.

(2) Loss due to fire should be written off.

(3) It is assumed that stock of tools will be revalued at the close of the year.

(4) Appreciation in value of stores should be ignored

Q. 285.

From the following particulars of the " Asiatic Brewery Ltd." for the three months ending 31st March 1955, prepare accounts showing:

(*a*) Prime Cost per barrel,
(*b*) Works Cost per barrel,
(*c*) Gross or Office Cost per barrel, and
(*d*) Profit per barrel.

Wages Rs. 6,000; Coal and Oil Rs. 5,600; Cooperage, corks and shives Rs. 2,000; Malt Rs. 20,000; Hops Rs. 5,400; Beer Duty Rs. 1,40,000; Water Rs. 500; Rent and Taxes Rs. 3,000; By-products Rs. 1,800; Sugars Rs. 7,000; Preservatives Rs. 800; Other Materials Rs. 600; Repairs Rs. 900; Depreciation Rs. 600; Office Establishment Expenses Rs. 12,000; Selling and Distribution Expenses Rs. 15,000.

Opening Stock of beer Rs. 20,250 (300 barrels); Closing Stock Rs. 33,750 (500 barrels); Beer sales Rs. 2,49,000 (2,800 barrels); Beer brewed during the period 3,000 barrels.

Answer :

PRODUCTION STATEMENT

(Output: Beer Brewed 3,000 Barrels)

—		Total Cost	Cost per Barrel
		Rs.	Rs. a. p.
Materials consumed :			
Malt		20,000	6 10 8
Hops		5,400	1 12 10
Sugar		7,000	2 5 4
Preservatives		800	0 4 3
Other Materials		600	0 3 2
Water		500	0 2 8
		34,300	11 6 11
Beer Duty		1,40,000	46 10 8
	Rs.	1,74,300	58 1 7
Less proceeds from sale of By-products		1,800	0 9 7
Cost of materials consumed	Rs.	1,72,500	57 8 0
Wages		6,000	2 0 0
	Prime Cost — Rs.	1,78,500	59 8 0
Brewery Expenses :			
Coal & Oil		5,600	1 13 10
Cooperage, Corks & Shives		2,000	0 10 8
Rent & Taxes		3,000	1 0 0
Repairs		900	0 4 10
Depreciation		600	0 3 2
	Works Cost Rs.	1,90,600	63 8 6
Office Establishment Expenses		12,000	4 0 0
	Gross Cost Rs.	2,02,600	67 8 6

TRADING ACCOUNT

—	Barrels	Total	Cost per Barrel	—	Barrels	Total	Cost per Barrel
		Rs.	Rs. a. p.			Rs.	Rs. a. p.
To Opening Stock	300	20,250		By Sales ..	2,800	2,49,000	88 14 10
„ Cost of production..	3,000	2,02,600	67 8 6	„ Stock at Cost	500	33,750	
„ Selling and Distribution Expenses ..		15,000	5 5 9				
„ Balance— Net Profit ..		44,900	16 0 7				
Rs.	3,300	2,82,750	88 14 10	Rs.	3,300	2,82,750	88 14 10

Note: Net Profit per Barrel: Rs. 16-0-7

Q. 286.

From the following particulars, obtained from the Financial Books, prepare a Manufacturing, Trading and Profit and Loss Account as would enable an easy comparison of the figures with those used in Costing:

	Rs.
Stock of Direct Materials, 1st January 1957	20,000
do. do. do. 31st December 1957	15,000
Purchase do. do.	85,000
Carriage Inwards	12,000
Direct Wages	1,25,000
Direct Expenses	7,500
Works Expenses :	
Works Salaries	25,000
Factory Rent & Taxes	5,000
Indirect Wages	4,500
Motive Power	3,500
Indirect Materials	1,000
Works Lighting and Heating	1,200
Works Repairs	1,500
Factory Insurance	700
Loose Tools consumed	500
Works Stationery	200
Plant and Works Depreciation	1,350
Oiling and Cleaning	350
Gas and Water	600
Workmen's Compensation	1,100
Administration Expense—chargeable to Works	2,000
Office Salaries and Wages	6,000
Office Rent and Taxes	900
Printing and Stationery	650
Office Repairs	210
Office Lighting and Insurance	300
Telephone Charges	425
Directors' Fees—portion chargeable to Administration	1,500
Legal Expenses	750
Audit Fees	1,000
Postage and Telegrams	325
Expenses of Sales and Distribution :	
Advertising	8,500
Printing and Stationery	1,750
Travellers' Salaries	2,500
Travellers' Commission	3,700
Showroom Expenses	1,150
Bad Debts	700
Postages and Sundries	800
Carriage and Freight outwards	1,400
Running Expenses—Delivery Vans	2,200
Depreciation—Delivery Vans	520
Insurance—Showroom, etc.	400
Directors' Fees—portion chargeable to Sales Expense	1,000

The Total Sales amounted to Rs. 3,70,000.

Answer :

MANUFACTURING, TRADING & PROFIT & LOSS ACCOUNT

	Rs.	Rs.
Direct Charges :		
Raw Materials, Stock 1st January 1957	20,000	
Purchases	85,000	
Carriage Inwards	12,000	
	1,17,000	
Less : Stock, 31st December 1957	15,000	
Materials consumed	1,02,000	
Direct Wages	1,25,000	
Direct or Chargeable Expenses	7,500	
Prime Cost = Rs.		2,34,500
Works Expenses :		
Works Salaries	25,000	
Indirect Materials	1,000	
Indirect Wages	4,500	
Factory Rent and Taxes	5,000	
Motive Power	3,500	
Factory Lighting and Heating	1,200	
Works Repairs	1,500	
Factory Insurance	700	
Loose Tools	500	
Works Stationery	200	
Plant and Works Depreciation	1,350	
Oiling and Cleaning	350	
Gas and Water	600	
Workmen's Compensation	1,100	
Administration Expenses—proportion	2,000	48,500
Factory or Works Cost = Rs.		2,83,000
Administration or Office Expenses :		
Office Salaries and Wages	6,000	
Office Rent and Wages	900	
Printing and Stationery	650	
Office Repairs	210	
Office Lighting and Insurance	300	
Postages and Telegrams	325	
Telephone Charges	425	
Directors' Fees	1,500	
Legal Expenses	750	
Audit Fees	1,000	12,060
Cost of Production : Carried forward Rs.		2,95,060

MANUFACTURING, TRADING & PROFIT & LOSS A/C.—(*Contd.*)

	Rs.	Rs.
Cost of Production : Brought forward Rs		2,95,060
Selling and Distribution Expenses :		
Advertising	8,500	
Printing and Stationery	1,750	
Travellers' Salaries . ..	2,500	
Travellers' Commission	3,700	
Showroom Expenses	1,150	
Bad Debts	700	
Postage and Sundries	800	
Carriage and Freight	1,400	
Running Expenses—Delivery Vans ..	2,200	
Depreciation—Delivery Vans.. ..	520	
Insurance	400	
Directors' Fees—portion . ..	1,000	
		24,620
Cost of Sales or Selling Cost . Rs.		3,19,680
Add : Net Profit		50,320
Total Sales - Rs		3,70,000

Q. 287.

In a factory two types of Radios are manufactured, viz. "Popular" and "De Luxe" models. From the following particulars, prepare a statement showing cost per radio and profit per radio sold. There is no opening or closing stock.

	"Popular"	"De Luxe"
	Rs.	Rs.
Labour	46,800	62,920
Materials	81,900	1,08,680

Works Oncost is charged at 80 per cent on Labour, and Office Oncost is taken at 15 per cent on Works Cost.

"Popular" radios sold during the period are 234 at Rs. 1,000 each and "De Luxe" radios sold were 286 at Rs. 1,100 each. Ascertain the total profit as per Cost Books from the above particulars. Prepare also a statement clearly showing why the profits as shown by the Financial Books and those appearing from the Cost Books differ.

Answer :

STATEMENT SHOWING THE COST PER RADIO AND PROFIT PER RADIO SOLD.

—		"Popular" model	"De Luxe" model
Radios manufactured and sold		234	286
		Rs.	Rs.
Average cost of Materials		350	380
" " " Labour		200	220
	Prime Cost	550	600
Works Oncost—80% on labour		160	176
	Works Cost	710	776
Office Oncost—15% on Works Cost		106.5	116.4
	Total Cost	816.5	892.4
	Sale Price per Radio	1,000	1,100
	Profit per Radio Rs	183.5	207.6

Total profit as per Cost Book —		
"Popular" 234 × 183.5	Rs.	42,939
"De Luxe" 286 × 207.6	"	59,373.6
	Rs	1,02,312.6

PROFIT AND LOSS ACCOUNT

	Rs.		Rs	Rs.
To Materials	1,90,680	By Sales.		
" Labour	1,09,720	"Popular	2,34,000	
" Works Expenses	87,000	"De Luxe	3,14,600	
" Office Expenses	58,000			5,48,600
" Net Profit as per Financial Books	1,03,300			
Rs	5,48,600		Rs	5,48,600

RECONCILIATION BETWEEN FINANCIAL BOOKS AND COST BOOKS

	Rs.	Rs.
Profit as per Financial Books		1,03,300
Less : Excess of Works Oncost recovered over actual Works Expenses		
Works Oncost "Popular" Model	37,440	
" " "De Luxe" Model	50,336	
	87,776	
Works Expenses as per Financial Books	87,000	
		776
		1,02,524
Less : Excess of Office Oncost recovered over actual Office Expenses :		
Office Oncost "Popular" Model	24,921	
" " "De Luxe" "	33,290.4	
	58,211.4	
Office Expenses as per Financial Books	58,000	
		211.4
Profit as per Cost Books = Rs.		1,02,312.6

Q. 288.

From the following information, prepare Cost Sheet of the Amalgamated Power Supply Co. Ltd. for the year ended 30th June 1955:

	Rs.
Machinery Repairs	**10,000**
Building Repairs	**1,000**
Repairs and Maintenance Mains	**90,000**
Coal	**7,00,000**
Wages (Generation)	**1,00,000**
Wages (Distribution)	**60,000**
Stores (Generation)	**60,000**
Water	**80,000**
Street Lighting	**2,000**
Sundries (Generation)	**1,200**
Rent and Taxes	**11,000**
Salaries to Engineers	**20,000**
Management Expenses	**67,000**
Workmen Compensation (Generation)	**900**
Salaries (Distribution)	**10,000**
Sundries (Distribution)	**8,000**
Output 1,00,00,000 Units	

Answer :

THE AMALGAMATED POWER SUPPLY CO. LTD

COST SHEET

for the year ended 30th June 1955

(Output 1,00,00,000 Units)

—		Output 1,00,00,000 Units	Cost per Unit
		Rs.	Rs.
To **Generation of Electricity:**			
Coal		7,00,000	.0700
Wages		1,00,000	.0100
Salaries of Engineers		20,000	.0020
Water		80,000	.0080
Stores		60,000	.0060
Workmen Compensation		900	.0001
Machinery Repairs		10,000	.0010
Building Repairs		1,000	.0001
Sundries		1,200	.0001
„ **Distribution:**	Rs.		
Wages	60,000		.0060
Salaries	10,000		.0010
Repairs and Maintenance of Mains, etc. ..	90,000		.0090
Street Lighting	2,000		.0002
Sundries	8,000		
		1,70,000	.0008
„ **Rent and Taxes**		11,000	.0011
„ **Management Expenses**		67,000	.0067
	Rs.	12,21,100	.1221

Q. 289.

The raw materials required for the manufacture of 1000 tons of produce " X " are purchased as follows:

			Rs.
From Lahore	700 Tons	.. .. ..	34,000
„ Rangoon	300 „	. .. ..	16,000
„ Madras	210 „	. . ..	10,500

110 tons of residue are transferred for manufacture of the by-product " Y " at current market rate viz. Rs. 10 per ton.

The main product " X " is sold at Rs. 90 per ton and by-product " Y " at Rs. 20 per ton.

Cost of manufacture of commodity " X " is Rs. 15 per ton and by-product " Y " is Rs. 4 per ton.

The overhead charges work out to Rs. 4 per ton for commodity " X " and Re. 1 per ton for by-product " Y ".

Both the main and by-products lose 1/11th in weight in process of manufacture.

Prepare production accounts indicating the results of the transactions.

Answer :

PRODUCTION ACCOUNT

(Relating to Manufacture of 1,000 tons of Commodity X)

	Tons	Rs.		Tons	Rs.
To Raw Materials ..	1,210	60,500	By Transferred to production account relating to manufacture of by-product ..	110	1,100
„ Cost of manufacture, 1,000 tons at Rs. 15 per ton		15,000	„ Cost of production per ton Rs. 78-6-5 c/d. ..	1,000	78,400
„ Overhead charges, 1,000 tons at Rs. 4 per ton		4,000	„ Loss of weight, commodity X ..	100	
	1,210	Rs. 79,500		1,210	Rs. 79,500
To Cost of Production b/d. ..		78,400	By Sales 1,000 tons at Rs. 90 per ton ..		90,000
„ Profit ..		11,600			
		Rs. 90,000			Rs. 90,000

PRODUCTION ACCOUNT

(Relating to Manufacture of 100 tons of By-product Y)

	Tons	Rs.		Tons	Rs.
To Transferred from Production account relating to manufacture of commodity X ..	110	1,100	By Cost of By-product Y—per ton Rs. 16 c/d. ..	100	1,600
„ Cost of manufacture 100 tons at Rs. 4 per ton ..		400	„ Loss of weight—By-product Y ..	10	
„ Overhead charges, 100 tons at Re. 1 per ton .		100			
	110	Rs. 1,600		110	Rs. 1,600
To Cost of By-product Y b/d.		1,600	By Sales, 100 tons at Rs. 20 per ton ..		2,000
„ Profit ..		400			
		Rs. 2,000			Rs. 2,000

Q. 290.

A business which manufactures two types of articles X and Y of varying bulk and weight, delivers its own products by its own transport. The total transport cost for the year ended 31st December 1954 worked out to Rs. 14,000.

From the following particulars show the transport cost to be charged to X type of articles and Y type of articles separately:

Turnover of articles X type Rs. 3,00,000
Turnover of articles Y type Rs. 9,00,000
Articles X and Y in standard load 3 tons and 1 ton respectively
Average sale price per ton of articles X Rs. 5
Average sale price per ton of articles Y Rs. 9
Lorry load 4 tons.

Answer :

(i) Standard lorry load is 4 tons in ratio of 3 : 1

(ii) Tonnage sold X type of articles 60,000

Rs.		Rs.		Ton		Tons
5	:	3,00,000	::	1	:	60,000

Tonnage sold Y type of articles 100,000

Rs.		Rs.		Ton		Tons
9	:	9,00,000	::	1	:	100,000

Therefore, tonnage ratio is 60,000 : 100,000
— 3 : 5
1st ratio .. 3 : 1
2nd ratio .. 3 : 5
Multiplied together = 9 : 5

Transport cost would therefore be charged to X type of articles Rs. 9,000 and Y type of articles Rs. 5,000.

Q. 291.

The following information relates to a contract work done by a Firm of Engineers during the year ended 31st December 1955:

	Rs.
Work certified by Architects	1,10,000
Materials used as per Materials Day Book ..	55,000
Wages	51,400
Plant installed at site	9,500
Value of Plant at 31st December 1955	7,200
Cash received from the Contractee	1,00,000
Establishment Charges	2,900
Cost of Work not certified	2,200
Direct Expenditure	2,100
Wages accrued due at 31st December 1955 ..	1,600
Materials in hand, 31st December 1955 ..	1,300
Materials returned to Store	500
Direct Expenditure accrued due at 31st December 1955	150
Contract Price	1,50,000

You are required to show the working of the Contract Account upto 31st December 1955 in order to ascertain the profit or loss made thereon.

Answer :

CONTRACT ACCOUNT

1955		Rs.	1955		Rs.
Jan./Dec.	To Materials .	55,000	Dec. 31	By Plant c/d. ..	7,200
	,, Labour ..	51,400		,, Cost of Work not certified c/d. .	2,200
	,, Plant ..	9,500		,, Materials in hand c/d.	1,300
	,, Establishment Charges .	2,900		,, Materials returned to Stores ..	500
	,, Direct Expenditure	2,100			11,200
Dec. 31	,, Wages accrued due c/d. ..	1,600		,, Contractee's Personal Account ..	1,10,000
	,, Direct Expenditure accrued due c/d. ..	150		,, Profit and Loss A/c.: Loss written off ..	1,450
	Rs.	1,22,650		Rs.	1,22,650
1956 Jan. 1	To Plant b/d. ..	7,200	1956 Jan. 1	By Wages accrued due b/d. ..	1,600
	,, Cost of Work not certified b/d. ..	2,200		,, Direct Expenditure accrued due b/d. ..	150
	,, Materials in hand b/d.	1,300			

Q. 292.

The Imperial Manufacturing Company's Product passes through two distinct processes, A and B, and then to Finished Stock. It is known from past experience that wastage occurs in the processes as under:

In Process A, 5% of the units entering the process.
" B, 10% " " "

The scrap value of the wastage in Process A is Rs. 8 per 100 units and in Process B is Rs. 10 per 100 units.

The Process figures are :—

	Process A Rs.	Process B Rs.
Materials consumed .. .	3,000	1,500
Wages	3,500	2,000
Manufacturing Expenses	1,000	1,000
5,000 Units were brought into Process A. costing	2,500	

The outputs were :—

Process A	4,700 units
" B	4,150 "

Prepare Process Cost Accounts showing the cost of the output.

Answer :

PROCESS A

	Units	Rs.		Units	Rs.
To Units brought in ..	5,000	2,500	By Normal wastage ..	250	20
" Materials ..		3,000	" Abnormal wastage ..	50	105
" Wages ..		3,500	" Transfer to Process B..	4,700	9,875
" Manufacturing Expenses ..		1,000			
	5,000	Rs. 10,000		5,000	Rs. 10,000

PROCESS B

	Units	Rs.		Units	Rs.
To Transfer from Process A ..	4,700	9,875	By Normal wastage ..	470	47
" Materials ..		1,500	" Abnormal wastage ..	80	271
" Wages ..		2,000	" Finished Stock ..	4,150	14,057
" Manufacturing expenses ..		1,000			
	4,700	Rs. 14,375		4,700	Rs. 14,375

The normal output of Process A is 5,000 — 5% thereof = 4,750
The normal cost of 4,750 Units is Rs. 10,000 — Rs. 20 = Rs. 9,980
Cost of abnormal wastage is

$$\frac{\text{Rs. } 9{,}980 \times 50}{4{,}750} = \text{Rs. } 105.$$

The normal output of Process B is 4,700 — 10% thereof = 4,230
The normal cost of 4,230 Units is Rs. 14,375 — Rs. 47 = Rs. 14,328
Cost of abnormal wastage is

$$\frac{\text{Rs. } 14.328 \times 10}{4{,}230} = \text{Rs. } 271.$$

Q. 293.

In a Machine Department of a Factory there are five machines. From the undermentioned information, prepare a machine-hour rate for one of the machines.

Space of Department		10,000 sq. ft.
Effective space occupied by Machine		2,000 „
Cost of Machine	Rs.	20,000
Estimated Scrap Value	Rs.	500
Estimated life of Machine		13 years

Depreciation is to be charged at 7½% per annum.

Normal running hours of Machine, 2,000 hours per annum.

There are 16 workers in the Department.

Power consumption for Machine, as shown by meter Rs. 3,000 per annum.

Estimated Repairs and Maintenance throughout working life Rs. 5,200.

Sundry supplies including Oil, Waste, etc. charged direct to machine amount to Rs. 600 per annum on average.

Other expenses are :—	Rs.
Rent and Rates	9,000
Lighting	400
Supervision	1,250
Other Charges	5,000

It is ascertained that the degree of supervision required by the machine is 2/5ths and 3/5ths being devoted to the other machines.

Four machinists attend to the machine; they receive Rs. 70, Rs. 60, Rs. 50, and Rs. 40 per month respectively.

Answer :

MACHINE HOUR RATE COMPUTATION

Item	Basis of Allocation	Cost per annum
		Rs.
Power	Actual	3,000
Rent & Rates	According to space occupied	1,800
Depreciation	7½% to reduce to Rs. 500 in 13 years	1,500
Other Charges	According to number of machines	1,000
Supervision	Actual	500
Sundry Supplies Oil, Waste, etc.	Estimated on average issue	600
Repairs & Maintenance	Estimated from past records	400
Lighting	According to number of workers employed on the machine	100
	Cost per annum Rs.	8,900

Notes :—Cost per operating hour is Rs. $\frac{8,900}{2,000}$ = Rs. 4-7-2.4.

Direct labour should be excluded from the Machine-Hour Rate.

Q. 294.

Three Contracts, beginning on 1st February, 1st June and 1st September respectively were undertaken by the Engineers Ltd. in 1954. Their accounts on 31st December 1954 showed the following position:

—	Contract No. 1	Contract No. 2	Contract No. 3
	Rs.	Rs.	Rs
Contract Price	1,60,000	1,08,000	1,20,000
Work certified	80,000	64,000	14,400
Work uncertified	2,400	3,200	800
Materials	28,800	23,200	8,000
Wages	44,000	45,000	5,600
General Expenses	1,600	1,100	400
Cash received in respect of work certified	60,000	48,000	10,800
Wages accrued	1,400	1,500	700
General Expenses accrued	300	200	100
Plant Installed	8,000	6,400	4,800
Materials on hand	1,600	1,600	800

On the respective dates of the Contracts, the plant was installed, depreciation thereon being taken at 15% per annum. You are required to prepare (*a*) Accounts in the Contract Ledger, and (*b*) a statement showing the estimated profit on Contracts Nos. 1, 2 & 3

Answer :

IN CONTRACT LEDGER

CONTRACT ACCOUNT NO. 1

		Rs.			Rs
1954 Feb./Dec.	To Materials	28,800	1954 Dec. 31	By Materials on hand c/fd	1,600
	„ Wages paid and accrued	45,400		„ Balance c/fd	75,600
	„ General Expenses paid and accrued	1,900			
	„ Depreciation Plant 15%	1,100			
	Rs.	77,200		Rs.	77,200
1955 Jan. 1	To Balance b/fd	75,600			
	„ Materials b/fd	1,600			

CONTRACT ACCOUNT NO. 2

		Rs			Rs
1954 June/Dec.	To Materials	23,200	1954 Dec. 31	By Materials on hand c/fd	1,600
	„ Wages paid and accrued	46,500		„ Balance c/fd	69,960
	„ General Expenses paid and accrued	1,300			
	„ Depreciation Plant 15%	560			
	Rs	71,560		Rs	71,560
1955 Jan. 1	To Balance b/fd.	69,960			
	„ Materials b/fd.	1,600			

CONTRACT ACCOUNT NO 3

1954		Rs.	1954		Rs.
Sept./Dec.	To Materials	8,000	Dec. 31	By Materials on hand c/fd.	800
	„ Wages paid and accrued	6,300		„ Balance c/fd	14,240
	General Expenses paid and accrued	500			
	„ Depreciation Plant 15	240			
	Rs	15,040		Rs	15,040
1955					
January 1	To Balance b/fd	14,240			
	„ Materials b/fd	800			

STATEMENT SHOWING ESTIMATED PROFIT ON CONTRACTS NOS 1 2 & 3

—	Contract No 1	Contract No 2	Contract No. 3
	Rs	Rs	Rs
Work Certified	80,000	64 000	14,400
Completed but uncertified	2,400	3,200	800
	82,400	67,200	15,200
Expenditure on work per Contract Ledger	75 600	69,960	14,240
	6,800	2,760	960
	Profit	Loss	Profit

Notes (*a*) In case of Contract No 1 as half the Contract has been completed only half of the profit ascertained as above should be transferred to Profit and Loss Account and the balance should be carried forward to next year

(*b*) In case of Contract No 2 the whole of the loss ascertained must be transferred to the Profit and Loss Account

(*c*) In case of Contract No 3 no Profit should be taken to credit as a very small portion of the contract has been worked so far

Q. 295.

From the following particulars of a Paint Factory Mill-room, extract the figures required to compute an hourly machine rate, and work this out on the basis that the factory will work on 85% capacity throughout the year. The holidays consist of 2 days for Holi, 3 for Coconut Day, Gokul Asthami and Ganesh Chaturthi, 3 for Divali and 3 other Bank Holidays. The factory works 9 hours a day.

In computing the expense rate, allow 5% for breakdown; allow a further 5% for absenteeism when computing the Labour Rate.

Number of Mills	40	
Number of Workers	28	
Average wage; Re. 0-4-0 per hour.	Rs.	
Foremen and Clerks' salaries	18,000	per annum
Power	46,800	„ „
Repairs to paint drums	20,500	„ „
Light	9,600	„ „
Lubricating Oil	1,000	„ „
Administration Charges	24,600	„ „
Hire of Motors	1,000	„ „
Storekeepers' Wages	6,900	„ „
Belt Repairs	4,700	„ „
Roll Grinding	3,800	„ „
Other Repairs	13,000	„ „
Rent	5,000	„ „
Depreciation of Plant and Machinery	7,000	„ „
Subscription to Annual Outing	400	„ „

Answer :

STATEMENT SHOWING THE MACHINE-HOUR RATE

	Rs.
Foremen and Clerks' salaries	18,000
Power	46,800
Light	9,600
Lubricating Oil	1,000
Administration Charges	24,600
Hire of Motors	1,000
Belt Repairs	4,700
Roll Grinding	3,800
Other Repairs	13,000
Rent	5,000
Depreciation of Plant and Machinery	7,000
Total Expenses for inclusion in Machine-Hour Rate	1,34,500

Storekeepers' wages, Repairs to Paint Drums and Subscription to Annual Outing are not taken into account while computing the machine-hour rate.

The number of hours worked is calculated as follows:

365 days *less* 52 Sundays	313 working days.
Less: Holidays	11 days.
Total days	302

302×9 hours per day $= 2{,}718$ hours worked

40 Mills running at 85% capacity run $\dfrac{2{,}718 \times 40 \times 85}{100} = 92{,}412.$

Allow 5% breakdown, leaving 87,791 hours.

The Machine-Hour Rate without absenteeism would be Rs. $\dfrac{1{,}34{,}500}{87{,}791} =$ Rs. 1·53.

The Labour-Hour Rate after taking into account 5% absenteeism would be $\dfrac{28 \times 2{,}718 \times 95}{4 \times 87{,}791 \times 100} =$ Re. ·21

The Machine-Hour Rate after taking into consideration absenteeism would be Re. 1·53 + ·21 = 1·74.

Q. 296.

From the following particulars, extracted from a Cost Ledger, prepare a Manufacturing Account and a Trial Balance:

		Rs.
Productive Wages		5,000
Stores		10,000
Office Oncost		2,135
Works Oncost Suspense Account (Work in Progress) ..		750
Completed Contracts		17,000
Chargeable Expenses		600
Works Oncost		3,750
Sales from Stock		3,500
Finished Stock on Hand		1,500
Jobs in Progress—	Rs.	
Wages	1,000	
Materials	3,250	
Chargeable Expenses	100	
		4,350
Office Oncost Suspense Account (Work in Progress) ..		510
Direct Goods		1,250

Answer :

MANUFACTURING ACCOUNT

	Rs.		Rs.
To Completed Contracts	17,000	**By Productive Wages**	5,000
„ Sales from Stock	3,500	**„ Direct Goods**	1,250
		„ Stores	10,000
	20,500	**„ Chargeable Expenses**	600
„ Balance	7,110	**„ Works Oncost**	3,750
		„ Office Oncost	2,135
			22,735
		„ Profit	4,875
Rs.	27,610	Rs.	27,610
		By Balance	7,110

TRIAL BALANCE

	Rs	Rs.
Manufacturing Account		7,110
Jobs in Process	4,350	
Works Oncost Suspense Account	750	
Office Oncost Suspense Account	510	
Finished Stock on hand	1,500	
Total Rs	7,110	7,110

Q. 297.

Concrete Products Ltd. use three identical big and six identical small machines. The working hours of each of the nine machines are 1,800 hours per year, while the effective working life is taken as 20,000 hours for each big machine and 12,000 hours for each small machine. The cost of each big machine is Rs. 10,300 and each small machine is Rs. 3,100. Scrap values are Rs. 300 and Rs. 100 respectively.

Each big machine occupies one-sixth of the workshop and fully employs six workers; each small machine occupies one-twelfth of the workshop and fully employs four workers.

Big machine consumes 5 units of electric power per hour and small machine 1 unit per hour. The cost per unit is anna one.

Repairs, Maintenance, Oil, etc. are estimated to cost for each big machine Rs. 2,500 and each small machine Rs. 750 during its effective life.

The Manager is paid Rs. 450 a month and workshop supervision occupies half of his time, which is divided equally among the nine machines.

Other expenses incurred during the month are as under:

	Rs.	a.	p.
Rent of Workshop	600	0	0
Lighting (to be apportioned in ratio of workers employed)	126	0	0
Insurance—Big Machines	4	11	0
do. —Small Machines	1	9	0

Taking a period of one month as basis, calculate the machine-hour rate for a big and small machine separately.

Answer:

MACHINE-HOUR RATE COMPUTATION

Month ending ....

	Big Machine Rs.	Small Machine Rs.
Rent	100	50
Supervision (Manager's Salary) ..	25	25
Lighting	18	12
Total Standing Charges Rs.	143	87

		Big Machine Rs.	a.	p.	Small Machine Rs.	a.	p.
Hourly Rates for Standing Charges ..		0	15	3	0	9	3
Machine Expenses:							
Depreciation:	Rs.						
Cost	10,300						
Less: Scrap Value ..	300						
	10,000	0	8	0			
Cost	3,100						
Less: Scrap Value ..	100				0	4	0
	3,000						
Repairs, Maintenance and Oil, etc. ..		0	2	0	0	1	0
Power		0	5	0	0	1	0
Insurance		0	0	6	0	0	2
Total Machine-Hour Rates Rs.		1	14	9	0	15	5

Q. 298.

From the understated particulars you are requested to prepare a monthly Cost Sheet of Fire-proof Brickworks, showing cost and profit per 1,000 bricks:

Material ·		
Coal ..		1,400 tons at Rs. 5 per ton.
Stores ..	Rs.	5,000
Labour:		
Brickmaking	Rs.	16,000
Indirect	Rs.	3,000
Oncost:		
Works ..		25 per cent of direct labour.
Office ..		10 per cent of works total cost.
Production for month		10,00,000 Bricks.
Sales for month		9,00,000 Bricks at Rs. 50 per 1,000
Stock, 1st of June 1955		2,00,000
Stock, 30th of June 1955		3,00,000

Answer:

THE FIRE-BRICK WORKS
COST SHEET
Month ended 30th June 1955

			Total Rs.	Cost per 1,000 Rs.	a.	p.
Materials						
Coal			7,000	7	0	0
Stores			5,000	5	0	0
Labour:						
Brickmaking			16,000	16	0	0
	Prime Cost		28,000	28	0	0
Indirect Labour	.. ..		3,000	3	0	0
Works Oncost	.. ..		4,000	4	0	0
	Works Cost		35,000	35	0	0
Office Oncost	.. ..		3,500	3	8	0
	Cost of Production	Rs.	38,500	38	8	0

SUMMARY

—	Quantity	Total Rs.	Cost per 1,000 Rs.	a.	p.
Stock, 1st June 1955	2,00,000	7,700	38	8	0
Production for June	10,00,000	38,500	38	8	0
	12,00,000	46,200	38	8	0
***Less* Stock on 30th June 1955**	3,00,000	11,550	38	8	0
Cost of Sales	9,00,000	34,650	38	8	0
Net profit		10,350	11	8	0
Sales for June 1955	9,00,000	Rs. 45,000	50	0	0

Note· It has been assumed that the opening stock was valued at the same price per 1,000 bricks as the production for June.

Q. 299.

The Bombay Transport Co. Ltd. conduct a goods service between Bombay and Poona. The following particulars are abstracted from their Cash Book for April 1956.

CASH BOOK

	Rs.		Rs.
To Cash received for work performed	12,000	By Petrol used	2,650
„ Cash received from New India Insurance Co. Ltd. on account of damage caused to lorry .	150	„ Motor Lorry Repairs	1,500
„ Cost of petrol recovered from Directors .	25	„ Fees for Licenses for year	1,425
		„ Drivers' Wages	1,200
		„ Oil used	450
		„ Garage Rent for February and March	360
		„ Cost of four Tyres	240

From the lorry drivers' records you find these particulars:

Tons carried—April 1956	.. ..	1,500
Miles travelled—April 1956	.. ..	16,000 miles
Work performed in April 1956 as per bills and vouchers	Rs.	8,250

You are also informed that the Company expects to carry 20,000 tons and cover a distance of 2,00,000 miles in a year; that the estimated life of a set of four tyres is 10,000 miles. The Capital of the company is Rs. 93,400. The depreciation for lorries is 15% on cost of Rs. 75,000. Monthly office charges are Rs. 250. The repairs are normal for the month. Insurance premium amounts to Rs. 1,125 per annum.

A rival Transport Company having started, The Bombay Transport Co. Ltd. seek your advice regarding the extent to which they can economically reduce their tonnage rates so as to realise a profit of 15% on their capital.

Prepare a statement showing the estimated total cost for the year and the reduction in rate.

Answer :

STATEMENT SHOWING ESTIMATED TOTAL COST FOR YEAR

	How calculated		Amount Rs.
Cost of Petrol ..	Rs. $2{,}625 \times \frac{2{,}00{,}000}{16{,}000}$	=	32,812
Motor-Lorry Repairs	(Rs. 1,500 — 150) × 12	=	16,200
Fees for Licenses ..	Rs. 1,425 for year		1,425
Drivers' Wages ..	„ $1{,}200 \times \frac{2{,}00{,}000}{16{,}000}$	=	15,000
	Carried forward Rs.		65,437

STATEMENT SHOWING ESTIMATED TOTAL COST FOR YEAR—*Contd.*

	How calculated		Amount Rs.
	Brought forward Rs.		65,437
Oil used ..	Rs $450 \times \frac{2,00,000}{16,000}$	=	5,625
Garage Rent ..	,, 180 × 12	=	2,160
Cost of Tyres ..	,, $240 \times \frac{2,00,000}{10,000}$	=	4,800
Depreciation on Lories 15% on Rs. 75,000		=	11,250
Office Charges .	,, 250 × 12	=	3,000
Insurance Premium .	,, 1,125 a year	=	1,125
	Estimated Total Cost Rs.		93,397
Add: 15% on their capital of Rs. 93,400		=	14,010
		Rs.	1,07,407
Estimated Tonnage to be carried	.. 20,000		
Average Rate per Ton ..	..	Rs.	5·37
Tons carried in April 1956 ..	. 1,500		
Charges made to Customers ..	Rs. 8,250		
Average rate per ton on present basis	..	..	5·50
	Reduction in rate	Rs.	0·13

Q. 300.

The Cost Ledger of Modern Perambulators Ltd. showed the following balances as at 1st January 1957:

	Rs.	Rs.
Stores Ledger Account	1,05,000	
Work-in-Progress Account	78,400	
Finished Goods Account	55,800	
Works Oncost Account .. .		1,000
Administration Oncost Account ..	600	
Cost Ledger Control Account ..		2,38,800
Rs.	2,39,800	2,39,800

Further balances resulting from the operations for the year ended 31st December 1957 were:

	Rs.
Stores Purchases	3,60,000
Stores issued to Production Orders ..	3,93,000
Stores issued to Works and Repairs Orders	15,000
Wages	6,15,000
Productive Labour	5,90,000
Unproductive Labour	25,000
Carriage Inwards	6,000
Works Oncost allocated to Production Orders	1,79,000
Works Expenses	1,40,000
Administration Expenses	28,000
Administration Oncost allocated to Production Orders	18,400
Goods finished during the year .	11,72,000
Finished Goods sold cost	12,00,000
Sales Expenses	13,400

Prepare the necessary accounts in the Cost Ledger, and a Schedule of Balances for the year ended 31st December 1957. Also explain what each balance represents.

Answer :

STORES LEDGER ACCOUNT

1957		Rs.	1957		Rs.
Jan. 1	To Balance b/fd. ..	1,05,000	Dec. 31	By Stores issued to Production Orders ..	3,93,000
Dec. 31	„ Purchases ..	3,60,000		„ Stores issued to Works and Repairs Orders ..	15,000
	„ Carriage Inwards ..	6,000		„ Balance c/d. ..	63,000
	Rs.	4,71,000		Rs.	4,71,000
1958					
Jan. 1	To Balance b/d. .	63,000			

WORK-IN-PROGRESS ACCOUNT

1957		Rs.	1957		Rs.
Jan. 1	To Balance b/fd. ..	78,400	Dec. 31	By Finished Goods ..	11,72,000
Dec. 31	„ Stores ..	3,93,000		„ Balance c/d. ..	86,800
	„ Wages ..	5,90,000			
	„ Works Oncost ..	1,79,000			
	„ Administration Oncost	18,400			
	Rs.	12,58,800		Rs.	12,58,800
1958					
Jan. 1	To Balance b/d. ..	86,800			

FINISHED GOODS ACCOUNT

1957		Rs.	1957		Rs.
Jan. 1	To Balance b/fd. ..	55,800	Dec. 31	By Cost of Sales ..	12,00,000
Dec. 31	„ Work-in-Progress ..	11,72,000		„ Balance c/d. ..	27,800
	Rs.	12,27,800		Rs.	12,27,800
1958					
Jan. 1	To Balance b/d. ..	27,800			

WORKS ONCOST ACCOUNT

1957		Rs.	1957		Rs.
Dec. 31	To Stores—Works and Repairs ..	15,000	Jan. 1	By Balance b/fd. ..	1 000
	„ Wages ..	25,000	Dec. 31	„ Work-in-Progress ..	1,79,000
	„ Expenses ..	1,40,000			
	Rs.	1,80,000		Rs.	1,80,000

ADMINISTRATION ONCOST ACCOUNT

1957		Rs.	1957		Rs.
Jan. 1	To Balance b/fd. ..	600	Dec. 31	By Work-in-Progress ..	18,400
Dec. 31	„ Expenses ..	18,000		„ Balance c/d. ..	200
	Rs.	18,600		Rs.	18,600
1958					
Jan. 1	To Balance b/d. ..	200			

WAGES ACCOUNT

1957		Rs.	1957		Rs.
Dec. 31	To Cost Ledger Control Account ..	6,15,000	Dec. 31	By Work-in-Progress ..	5,90,000
				„ Works Oncost ..	25,000
	Rs.	6,15,000		Rs.	6,15,000

COST OF SALES ACCOUNT

1957		Rs.	1957		Rs.
Dec. 31	To Finished Goods ..	12,00,000	Dec. 31	By Cost Ledger Control Account ..	12,13,400
	„ Selling Expenses ..	13,400			
	Rs.	12,13,400		Rs.	12,13,400

COST LEDGER CONTROL ACCOUNT

1957		Rs.	1957		Rs.
Dec. 31	To Cost of Sales ..	12,13,400	Jan. 1	By Balance b/fd. ..	2,38,800
	„ Balance c/d. ..	1,77,800		„ Purchases ..	3,60,000
				„ Wages ..	6,15,000
				„ Carriage Inwards ..	6,000
				„ Works Expenses ..	1,40,000
				„ Administration Expenses ..	18,000
				„ Sales Expenses ..	13,400
	Rs.	13,91,200		Rs.	13,91,200
			1958		
			Jan. 1	By Balance b/d. ..	1,77,800

TRIAL BALANCE

As at 31st December 1957

	Rs.	Rs.
Stores Ledger Account	63,000	
Work-in-Progress Account	86,800	
Finished Goods Account	27,800	
Administration Oncost Account ..	200	
Cost Ledger Control Account ..		1,77,800
Rs.	1,77,800	1,77,800

Notes: It is assumed that (1) Works and Repairs orders are only service orders for repairs and maintenance; (2) Carriage has been added to the issue price of stores, and the requisitions valued accordingly.

The following is an explanation of the above balances.

Stores Ledger Account.—This balance in the Cost Ledger represents the total of the individual balances appearing in the Stores Ledger.

Work-in-Progress.—This is a " Control " account for all Job and Contract Accounts appearing in the Cost Ledger, and, therefore, the balance on this account must equal the balances on all jobs accounts.

Finished Goods Account.—This again is a " Control " account for the Stock Ledger, and represents the cost of Finished Goods unsold.

Administration Oncost Account.—The debit represents the amount by which such Oncost is under-allocated. As there is also an opening debit balance, it shows that a revision in the oncost rate is necessary. It may be advisable to transfer this debit to the Cost Ledger Control Account, without disturbing the rate.

Cost Ledger Control Account.—This is similar to the Capital Account in the financial books and the balance on this account is equal to the total of the debit balances (less any credit balances remaining in the Cost Ledger).

Q. 301.

The net profits of the Standard Manufacturing Co. Ltd. appeared at Rs. 1,28,755 as per the Financial Records for the year ended 31st December 1957. The Cost Books, however, showed a net profit of Rs. 1,72,400 for the same period. A scrutiny of the figures from both the sets of accounts elicitated the following facts:

	Rs.
Works Overhead under-recovered in Costs .	3,120
Administrative Overhead recovered in excess ..	1,700
Depreciation charged in Financial Accounts .	11,200
Depreciation recovered in Costs .. .	12,500
Interest on Investments not included in Costs	8,000
Loss due to obsolescence—charged in Financial A/c.s .	5,700
Income-tax provided in Financial Accounts	40,300
Bank Interest and Transfer Fees (in Financial Books)	750
Stores Adjustments (credit in Financial Books)	475
Loss due to depreciation in Stock values (Charged in Financial Accounts) . .	6,750

You are required to prepare a Profit & Loss (Reconciliation) Statement to reconcile both the figures of Net Profits.

Answer:

PROFIT & LOSS (RECONCILIATION) STATEMENT

For the three months ended

	Rs.		Rs.
To Works Overhead Under-recovered	3,120	By Net Profit as per General Cost Ledger .	1,72,400
„ Loss due to obsolescence ..	5,700	„ Administrative Overhead recovered in excess ..	1,700
„ Income-tax ..	40,300	„ Depreciation charged in excess Amount recovered in Costs .. Rs. 12,500 Amount charged in financial accounts .. 11,200	1,300
„ Loss due to Depreciation in stock values ..	6,750	„ Interest on Investments ..	8,000
„ Net Profit for the period as per financial accounts ..	1,28,755	„ Bank Interest and Transfer Fees	750
		„ Stores Adjustments ..	475
Rs.	1,84,625	Rs.	1,84,625

Q. 302.

You are required to write out the Cost Journal, the Job Cost Ledger and the General Cost Ledger of the Empire Engineering Company Ltd., from the following particulars:

During the half year ended 30th June 1954, five jobs were undertaken out of which Nos. 107, 108 and 109 were completed whereas Nos. 110 and 111 were still under process. The amount of Direct Labour expended on each Job as per the Direct Wages Abstract was No. 107 Rs. 6,400, No. 108 Rs. 8,000, No. 109 Rs. 4,800, No. 110 Rs. 3,200 and No. 111 Rs. 1,600.

The materials bought specifically for each of the five jobs as per the Direct Materials Analysis were Rs. 1,600, Rs. 2,000, Rs. 1,200, Rs. 800 and Rs. 400 respectively. Stores Issued Analysis shows the following amount of materials issued to each job: No. 107 Rs. 11,200, No. 108 Rs. 14,000, No. 109 Rs. 8,400, No. 110 Rs. 9,600 and No. 111 Rs. 4,800. Materials worth Rs. 200 were returned from Job No. 108 to Stores, and those worth Rs. 600 were transferred from Job No. 109 to Job No. 111.

The Direct Expenses as per the Chargeable Expense Analysis are to be allocated as follows: No. 107 Rs. 800, No. 108 Rs. 1,000, No. 109 Rs. 600, No. 110 Rs. 320 and No. 111 Rs. 160.

It is estimated that works overhead expenses amount to 75 per cent of the Direct Wages. The Office Oncost is to be taken at 7½ per cent of the Works Cost of each Job. Jobs Nos. 107 and 108 were taken up at the contract price of Rs. 30,000 and Rs. 38,000 respectively. Job No. 109 was for the purpose of Factory Stock, out of which goods amounting to Rs. 14,000 were sold during the period.

The Stock of finished goods at the time of closing was valued at Rs. 15,000.

Answer:

ENTRIES IN COST JOURNAL

		L.F.	Rs.	Rs.
(1)	Job No. 107 Account .. .. .. Dr.		6,400	
	„ „ 108 „ .. .. .. „		8,000	
	„ „ 109 „ .. .. .. „		4,800	
	„ „ 110 „ .. .. .. „		3,200	
	„ „ 111 „ .. .. .. „		1,600	
	To Direct Wages Account			24,000
	(Being the amount of Productive Wages chargeable to each job as ascertained from the Productive Wages Abstract Book.)			

ENTRIES IN COST JOURNAL (*Contd.*)

		L.F.	Rs.	Rs.
(2)	Job No. 107 Account .. .. .. Dr.		1,600	
	" " 108 " .. .. .. "		2,000	
	" " 109 " .. .. .. "		1,200	
	" " 110 " .. .. .. "		800	
	" " 111 " .. .. .. "		400	
	To Direct Materials Account			6,000
	(Being the amount of Direct Materials purchased specifically for each job as per Direct Materials Analysis.)			
(3)	Job No. 107 Account .. .. .. Dr.		11,200	
	" " 108 " .. .. .. "		14,000	
	" " 109 " .. .. .. "		8,400	
	" " 110 " .. .. .. "		9,600	
	" " 111 " .. .. .. "		4,800	
	To Stores Account			48,000
	(Being the amount of Materials issued from stores to each particular job as ascertained from the Stores Issued Analysis.)			
(4)	Stores Account .. .. Dr.		200	
	To Job No. 108 Account			200
	(Being the amount of Materials Returned to stores from Job No. 108.)			
(5)	Job No. 111 Account .. .. .. Dr.		600	
	To Job No. 109 Account			600
	(Being the amount of Materials transferred from Job No. 109 to Job No. 111.)			
(6)	Job No. 107 Account .. .. .. Dr.		800	
	" " 108 " .. .. .. "		1,000	
	" " 109 " .. .. .. "		600	
	" " 110 " .. .. .. "		320	
	" " 111 " .. .. .. "		160	
	To Chargeable Expenses Account			2,880
	(Being the amount of chargeable expenses as per Chargeable Expense Analysis.)			
(7)	Job No. 107 Account .. .. .. Dr.		4,800	
	" " 108 " .. .. .. "		6,000	
	" " 109 " .. .. .. "		3,600	
	To Works Oncost Account			14,400
	(Being the amount of Factory Oncost charged to each completed job at 75% of Direct Wages.)			
(8)	Job No. 107 Account .. .. .. Dr.		1,860	
	" " 108 " .. .. .. "		2,310	
	" " 109 " .. .. .. "		1,350	
	To Office Oncost Account			5,520
	(Being the amount of Office Oncost charged to each completed job at 7½% on Works Cost.)			
(9)	Completed Jobs Account .. .. .. Dr.		68,000	
	To Job No. 107 Account			30,000
	" " " 108 "			38,000
	(Being the sale price of each completed job credited to the job accounts.)			
(10)	Finished Goods Account .. .. .. Dr.		19,350	
	To Job No. 109 Account			19,350
	(Being the Gross Cost of Job No. 109 transferred to finished stock account as the job was for the purpose of stock.)			

ENTRIES IN COST JOURNAL (*Contd.*)

		L.F.	Rs.	Rs.
(11)	Job No. 107 Account .. .. .. Dr.		3,340	
	„ „ 108 „ .. .. .. „		4,890	
	To Profit & Loss on Completed Jobs Account			8,230
	(Being Profits on above-mentioned jobs transferred.)			
(12)	Sales from Stock Account .. .. .. Dr.		14,000	
	To Finished Goods Account			14,000
	(Being the sale price of the Finished Goods sold from Stock during the period.)			
(13)	Work-in-Progress Account .. .. .. Dr.		21,480	
	To Job No. 110 Account			13,920
	„ „ „ 111 „			7,560
	(Being the Transfer of Incomplete Jobs to Work-in-progress Account at Prime Cost.)			
(14)	Works Oncost on Work-in-progress .. .. Dr.		3,600	
	To Works Oncost Account			3,600
	(Being the amount of Factory Oncost incurred on Incomplete Jobs charged to the former account at 75% of Direct Wages on such jobs.)			
(15)	Office Oncost on Work-in-progress .. .. Dr.		1,611	
	To Office Oncost Account			1,611
	(Being the amount of Office Establishment Expenses chargeable to Incomplete Jobs debited to former account at 7½% on Work Cost to date.)			
(16)	Stock of Finished Goods Account .. .. Dr.		15,000	
	To Finished Goods Account			15,000
	(Being the value of Stock of Finished Goods at the time of closing brought into record.)			
(17)	Finished Goods Account .. .. .. Dr.		9,650	
	To Profit & Loss on sale from Stock			9,650
	(Being Profit on sale of Finished Goods transferred.)			
(18)	Manufacturing Account .. .. .. Dr.		82,000	
	To Completed Jobs Account			68,000
	„ Sales from Stock Account			14,000
	(Being the transfer of debit Balances on Nominal Accounts to Manufacturing Account.)			
(19)	Direct Wages Account .. .. .. Dr.		24,000	
	Direct Materials Account .. .. .. „		53,800	
	Chargeable Expenses Account .. .. „		2,880	
	Works Oncost Account .. .. .. „		18,000	
	Office Oncost Account .. .. .. „		7,131	
	To Manufacturing Account			1,05,811
	(Being the transfer of credit balances on Nominal Accounts to Manufacturing Account.)			
(20)	Profit on completed Jobs Account .. .. Dr.		8,230	
	Profit on sale from Stock Account .. .. „		9,650	
	To Manufacturing Account			17,880
	(Being Profit on the above accounts transferred to Manufacturing Account.)			

JOB COST LEDGER

JOB NO 107 ACCOUNT

—	Materials	Wages	Chargeable Expenses	—	
	Rs	Rs.	Rs.		Rs.
To Direct Wages		6,400		By Completed Jobs Account	30,000
,, Direct Materials ..	1,600				
,, Stores Materials ..	11,200				
,, Chargeable Expenses .			800		
Rs.	12,800	6,400	800		
Prime Cost =		20,000			
To Works Oncost 75% on Wages ..		4,800			
Works Cost =		24,800			
,, Office Oncost 7½% on Works Cost		1,860			
Total Cost =		26,660			
,, Profit & Loss on Jobs A/c. (Profit transferred)..		3,340			
Rs.		30,000		Rs.	30,000

JOB NO 108 ACCOUNT

—	Materials	Wages	Chargeable Expenses	—	
	Rs.	Rs.	Rs		Rs.
To Direct Wages .		8,000		By Stores Returned .	200
,, Direct Materials	2,000				
,, Stores Materials	14,000				
,, Chargeable Expenses			1,000	,, Completed Jobs Account	38,000
Rs.	16,000	8,000	1,000		
Less: Stores returned ..	200				
Rs.	15,800	8,000	1,000		
Prime Cost =		24,800			
,, Works Oncost 75% on Wages ..		6,000			
Works Cost =		30,800			
,, Office Oncost 7½% on Works Cost ..		2,310			
Total Cost =		33,110			
,, Profit & Loss on Jobs A/c. (Profit transferred) .		4,890			
Rs.		38,000		Rs.	38,000

STOCK JOB NO. 109 ACCOUNT

—	Materials	Wages	Chargeable Expenses	—	
	Rs.	Rs.	Rs.		Rs.
To Direct Wages ..		4,800		By Job No. 111 (Transfer)..	600
" Direct Materials ..	1,200				
" Stores Materials ..	8,400				
" Chargeable Expenses ..			600	" Finished Goods Account (Transfer) ..	19,350
Rs.	9,600	4,800	600		
Less Stores transferred..	600				
Rs.	9,000	4,800	600		
Prime Cost =		14,400			
" Works Oncost 75% on Wages ..		3,600			
Works Cost =		18,000			
" Office Oncost 7½% on Works Oncost ..		1,350			
Total Cost =	Rs.	19,350		Rs.	19,350

JOB NO 110 ACCOUNT

—	Materials	Wages	Chargeable Expenses	—	
	Rs.	Rs.	Rs.		Rs.
To Direct Wages ..		3,200		By Work-in-progress	
" Direct Materials ..	800			(Transfer) ..	13,920
" Stores Materials ..	9,600				
" Chargeable Expenses ..			320		
Rs.	10,400	3,200	320		
Rs.		13,920		Rs.	13,920

JOB NO 111 ACCOUNT

—	Materials	Wages	Chargeable Expenses	—	
	Rs.	Rs.	Rs.		Rs.
To Direct Wages ..		1,600		By Work-in-Progress A/c.	
" Direct Materials ..	400			(Transfer) ..	7,560
" Stores Materials ..	4,800				
" Stores transferred from Job No. 109 ..	600				
" Chargeable Expenses ..			160		
Rs.	5,800	1,600	160		
Rs.		7,560		Rs.	7,560

GENERAL COST LEDGER

DIRECT (PRODUCTIVE) WAGES ACCOUNT

	Rs.		Rs.
To Manufacturing Account (Transfer)	24,000	By Sundry Jobs Accounts ..	24,000

DIRECT MATERIALS ACCOUNT

	Rs.		Rs.
To Return of Stores from Job No. 108	200	By Sundry Jobs Accounts (Direct Purchases) ..	6,000
„ Manufacturing Account (Transfer)	53,800	„ Sundry Jobs Accounts (Issue from Stores) ..	48,000
Rs.	54,000	Rs.	54,000

CHARGEABLE EXPENSES ACCOUNT

	Rs.		Rs.
To Manufacturing Account (Transfer)	2,880	By Sundry Jobs Accounts ..	2,880

WORKS OVERHEAD ACCOUNT

	Rs.		Rs.
To Manufacturing Account (Transfer)	18,000	By Sundry Jobs Accounts ..	14,400
		„ Works Oncost on Work-in-progress	3,600
Rs.	18,000	Rs.	18,000

OFFICE OVERHEAD ACCOUNT

	Rs.		Rs.
To Manufacturing Account (Transfer)	7,131	By Sundry Jobs Accounts ..	5,520
		„ Office Oncost on Work-in-progress	1,611
Rs.	7,131	Rs.	7,131

COMPLETED JOBS ACCOUNT

	Rs.		Rs.
To Sundry Jobs Accounts ..	68,000	By Manufacturing Account (Transfer)	68,000

FINISHED GOODS ACCOUNT

	Rs.		Rs.
To Job No. 109 ..	19,350	By Sales from Stock ..	14,000
„ Profit on Sale of Stock ..	9,650	„ Stock of Finished Goods ..	15,000
Rs.	29,000	Rs.	29,000

PROFIT & LOSS ON COMPLETED JOBS ACCOUNT

	Rs.		Rs.
To Manufacturing Account (Transfer)	8,230	By Sundry Jobs Accounts ..	8,230

SALES FROM STOCK ACCOUNT

	Rs.		Rs.
To Finished Goods Account ..	14,000	By Manufacturing Account ..	14,000

WORK-IN-PROGRESS ACCOUNT

	Rs.		Rs.
To Sundry Jobs Accounts ..	21,480	By Balance c/d. ..	21,480
To Balance b/d. ..	21,480		

WORKS OVERHEAD ON WORK-IN-PROGRESS ACCOUNT

	Rs.		Rs.
To Works Overhead ..	3,600	By Balance c/d. ..	3,600
To Balance b/d. ..	3,600		

OFFICE OVERHEAD ON WORK-IN-PROGRESS ACCOUNT

	Rs.		Rs.
To Office Overhead Account ..	1,611	By Balance c/d. ..	1,611
To Balance b/d. ..	1,611		

STOCK OF FINISHED GOODS ACCOUNT

	Rs.		Rs.
To Finished Goods ..	15,000	By Balance c/d. ..	15,000
To Balance b/d. ..	15,000		

PROFIT & LOSS ON SALE FROM STOCK

	Rs.		Rs.
To Manufacturing Account (Transfer)	9,650	By Finished Goods ..	9,650

MANUFACTURING ACCOUNT

	Rs.		Rs.
To Completed Jobs ..	68,000	By Direct Wages ..	24,000
„ Sales from Stock ..	14,000	„ Direct Materials ..	53,800
„ Balance c/d. ..	41,691	„ Chargeable Expenses ..	2,880
		„ Works Overhead ..	18,000
		„ Office Overhead ..	7,131
		„ Profit on Completed Jobs ..	8,230
		„ Profit on sale of finished stock ..	9,650
Rs.	1,23,691	Rs.	1,23,691
		By Balance b/d. ..	41,691

TRIAL BALANCE

	Rs.	Rs.
Work-in-Progress Account	21,480	
Works Oncost on work-in-progress ..	3,600	
Office Oncost on work-in-progress ..	1,611	
Stock of Finished Goods	15,000	
Manufacturing Account		41,691
Rs.	41,691	41,691

Q. 303.

From the following particulars as ascertained from the Cost and Financial Accounts for the three months ended 30th June 1955, you are required to pass entries through the Cost Journal and post the same to the appropriate Cost Control and other necessary accounts in order to reconcile both these sets of Books.

	Rs.	Rs.
Balances on 31st March 1955 :		
Finished Goods (Stock)		72,900
Work-in-progress:		
Material	5,505	
Labour	6,200	
Overhead	2,100	
		13,805
Material Stores Stock		45,750
Cost Ledger Control Account—Balance (Credit) ..		1,32,455
Transactions for the three months:		
Materials purchased for Stores during the three months (less returns)		30,500
Materials purchased for special orders		8,000
Issues of Direct Materials from Stores		25,300
Materials issued for Non-productive services ..		7,800
Returns of Materials from Jobs to Stores ..		1,200
Total Wages incurred for the month (as per financial records)		32,350
Wages allocated to:		
Production		27,500
Non-productive services (as per wages analysis) ..		4,850
Completed goods passed to Finished Stock:		
Materials	31,470	
Labour	30,350	
Overhead	30,580	
		92,400
Other Factory Expenses (as per Financial Records)		14,000
Factory Overhead allocated to works		26,300
Office Administration Expenses (as per Financial Records)		4,290
Administration Overhead allocated to works ..		4,500
Selling and Distribution Expenses		5,725
Finished Goods sold (Cost Rs. 1,08,000)		1,32,000
Closing Stock:		
Materials		44,200
Work-in-progress:		
Materials	6,135	
Labour	3,350	
Overhead	2,320	
		11,805
Finished Goods		57,300

Answer :

ENTRIES IN COST JOURNAL

		L.F.	Rs.	Rs.
(1)	Material Stores Control Account .. Dr.		30,500	
	To Cost Ledger Control Account			30,500
	(Being goods purchased for the stores during the three months.)			
(2)	Work-in-progress Account .. .. Dr.		8,000	
	To Cost Ledger Control Account			8,000
	(Being goods purchased directly for special orders.)			
(3)	Work-in-progress Account .. .. .. Dr.		25,300	
	To Material Stores Control Account			25,300
	(Being materials issued from stores to work-in-progress.)			
(4)	Factory Overhead Control Account .. .. Dr.		7,800	
	To Material Stores Control Account			7,800
	(Being material issued for non-productive services.)			
(5)	Material Stores Control Account .. .. Dr.		1,200	
	To Work-in-progress Account			1,200
	(Being materials returned to Stores by Works.)			
(6)	Wages Control Account .. .. .. Dr.		32,350	
	To Cost Ledger Control Account			32,350
	(Being actual wages ascertained as per financial books.)			
(7)	Work-in-progress Account .. .. .. Dr.		27,500	
	To Wages Control Account			27,500
	(Being direct wages allocated to work-in-progress as per wages analysis.)			
(8)	Factory Overhead Control Account .. Dr.		4,850	
	To Wages Control Account			4,850
	(Being indirect wages charged to Factory Overhead.)			
(9)	Administration Overhead Control Account Dr.		4,290	
	To Cost Ledger Control Account			4,290
	(Being actual administration expenses incurred as per financial records.)			
(10)	Work-in-progress Account .. .. .. Dr.		4,500	
	To Administration Overhead Control Account			4,500
	(Being Administration Expenses allocated to Works.)			
(11)	Factory Overhead Control Account .. Dr.		14,000	
	To Cost Ledger Control Account			14,000
	(Being other Factory Expenses as per financial books.)			
(12)	Work-in-progress Account .. .. . Dr.		26,300	
	To Factory Overhead Control Account			26,300
	(Being Factory Overhead allocated to work-in-progress.)			
(13)	Overhead Expenses Adjustment Account .. Dr.		500	
	To Factory Overhead Control Account			500
	(Being Factory Overhead under-recovered transferred.)			
(14)	Administration Overhead Control Account .. Dr.		210	
	To Overhead Expenses Adjustment Account			210
	(Being Administration Overhead over-recovered.)			

ENTRIES IN COST JOURNAL (*Contd.*)

			L.F.	Rs.	Rs.
(15)	**Finished Stock Control Account .. .. Dr.**			92,400	
	To Work-in-progress Account				92,400
	Materials	31,470			
	Labour	30,350			
	Overhead	30,580			
	(Being completed Goods passed to Finished Stock.)				
(16)	**Factory Overhead Control Account .. .. Dr.**			150	
	To Material Stores Control Account				150
	(Being shortage of Stock adjusted to Factory Overhead Control Account.)				
(17)	**Cost of Sales Account .. .. .. Dr.**			1,08,000	
	To Finished Stock Control Account				1,08,000
	(Being goods issued from Finished Stock at cost against Sales Orders.)				
(18)	**Sales Expense Control Account .. .. Dr.**			5,725	
	To Cost Ledger Control Account				5,725
	(Being the Sales Expenses for the period.)				
(19)	**Cost of Sales Account .. .. Dr**			5,725	
	To Sales Expense Control Account				5,725
	(Being Selling & Distribution expenses allocated to actual sales)				
(20)	**Cost Ledger Control Account .. .. Dr.**			1,32,000	
	To Profit and Loss Account				1,32,000
	(Being the sale price of the Goods sold)				

GENERAL COST LEDGER

MATERIAL STORES CONTROL ACCOUNT

1955		Rs.	1955		Rs.
April 1	To Balance b/d ..	45,750	June 30	By Work-in-progress (Issues)	25,300
June 30	„ Cost Ledger Control A/c. (Purchases) ..	30,500		„ Factory Overhead Control Account (Non-Productive services) ..	7,800
	„ Work-in-progress A/c. (Returns) ..	1,200		„ Factory Overhead Control A/c. (Transfer of Stock shortage) ..	150
				„ Balance—(closing stock c/d.) ..	44,200
	Rs.	77,450		Rs.	77,450
1955					
July 1	To Balance—Stock b/d. ..	44,200			

WAGES CONTROL ACCOUNT

1955		Rs.	1955		Rs.
June 30	To Cost Ledger Control Account (as per financial records) .	32,350	June 30	By Work-in-progress (productive) ..	27,500
				,, Factory Overhead Control Account Wages (Non-productive) ..	4,850
	Rs.	32,350		Rs.	32,350

FACTORY OVERHEAD CONTROL ACCOUNT

1955		Rs.	1955		Rs.
June 30	To Cost Ledger Control Account ..	14,000	June 30	By Work-in-progress A/c. ..	26,300
	,, Wages Control Account	4,850		,, Overhead Expense Adjustment Account (Under-recovered) ..	500
	,, Material Stores Control Account .	7,800			
	,, Stores Adjustment (Shortage) ..	150			
	Rs.	26,800		Rs.	26,800

WORK-IN-PROGRESS ACCOUNT

1955			Rs.	1955			Rs.
April 1	To Balance b/d.	Rs.		June 30	By Stores Returns .		1,200
	Material .	5,505			,, Finished Stock Control Account ..		92,400
	Labour .	6,200			,, Balance c/d.—	Rs.	
	Overhead .	2,100	13,805		Materials ..	6,135	
June 30	,, Cost Ledger Control Account (Direct purchases) ..		8,000		Labour ..	3,350	
	,, Material Stores Control Account ..		25,300		Overhead ..	2,320	11,805
	,, Wages Control Account ..		27,500				
	,, Factory Overhead Control Account ..		26,300				
	,, Administrative Overhead Control Account ..		4,500				
	Rs.		1,05,405		Rs.		1,05,405
July 1	To Balance b/d.—						
	Materials ..	6,135					
	Labour ..	3,350					
	Overhead ..	2,320	11,805				

ADMINISTRATION OVERHEAD CONTROL ACCOUNT

1955		Rs.	1955		Rs.
June 30	To Cost Ledger Control Account	4,290	June 30	By Work-in-progress A/c. (amount allocated in costs)	4,500
	" Overhead Expense Adjustment Account (Over-recovered)	210			
	Rs.	4,500		Rs.	4,500

FINISHED STOCK CONTROL ACCOUNT

1955		Rs.	1955		Rs.
April 1	To Balance b/d.	72,900	June 30	By Cost of Sales Account	1,08,000
	" Work-in-progress A/c.	92,400		" Balance— Closing Stock c/d.	57,300
	Rs.	1,65,300		Rs.	1,65,300
July 1	To Balance —Stock b/d.	57,300			

COST OF SALES ACCOUNT

1955		Rs.	1955		Rs.
June 30	To Finished Stock Control Account	1,08,000	June 30	By Profit & Loss Account	1,13,725
	" Sales Expense Control Account—Selling & Distribution Overhead	5,725			
	Rs	1,13,725		Rs	1,13,725

SALES EXPENSE CONTROL ACCOUNT

1955		Rs.	1955		Rs.
June 30	To Cost Ledger Control A/c.	5,725	June 30	By Cost of Sales Account	5,725

OVERHEAD EXPENSES ADJUSTMENT ACCOUNT

1955		Rs.	1955		Rs.
June 30	To Factory Overhead Control Account (Under-recovered)	500	June 30	By Administrative Overhead Control Account (Over-recovered)	210
				" Profit & Loss Account	290
	Rs.	500		Rs.	500

PROFIT AND LOSS ACCOUNT

1955		Rs.	1955		Rs.
June 30	To Cost of Sales Account . .	1,13,725	June 30	By Cost Ledger Control Account (Sales) . .	1,32,000
	„ Overhead Expenses Adjustment Account . .	290			
	„ Net Profit as per Cost Ledger Control Account	17,985			
	Rs.	1,32,000		Rs.	1,32,000

COST LEDGER CONTROL ACCOUNT

1955		Rs.	1955			Rs.
June 30	To Sales as per Profit & Loss Account . .	1,32,000	April 1	By Balance b/d. . .		1,32,455
	„ Balance c/d.—Materials	44,200	June 30	„ Material Stores Control Account (Purchases for Stores) .		30,500
	„ Work-in-progress A/c. .	11,805		„ Work in-progress A/c. (Direct Purchases) .		8,000
	„ Finished Goods .	57,300		„ Wages Control Account		32,350
				„ Administrative Overhead Control Account		4,290
				„ Factory Overhead Control Account . .		14,000
				„ Sales Expense Control Account .		5,725
				„ Profit & Loss Account—Balance		17,985
	Rs.	2,45,305		Rs.		2,45,305
			1955			
			July 1	By Balance b/d — Materials . .	44,200	
				„ Work-in-progress	11,805	
				„ Finished Goods	57,300	1,13,305

Notes. (*a*) Cost Ledger Control Account has been opened to incorporate the figures from the Financial Books on Double Entry principles

(*b*) Separate Accounts may be opened for Direct and Indirect Materials, if need be

(*c*) The shortage of stock as ascertained on stock taking is adjusted by transfer to Works Overhead Control Account

(*d*) The Works Overhead Control Account may be further sub-divided into Departmental Overheads, if so desired

Q. 304.

From the following figures ascertained from the Costing and Financial Departments of the Reliable Frigidaires Ltd., for the six months ended 30th June 1957, you are required to pass the necessary entries in the Cost Journal to close the books and to prepare Ledger Accounts and Trial Balance:

	31st Dec. 1956	30th June 1957
	Rs.	Rs.
Work-in-Progress Account—Balance	1,61,200	1,28,960
Stock of Finished Goods — do.	1,26,620	1,33,250
Stores on hand — do	83,200	1,17,130
Purchases		3,90,000
Carriage Inwards		5,850
Stores issued		3,58,800
Productive Wages		3,46.320
Unproductive Labour		1,21,680
Works Oncost		3.48,400
Materials used in repairs		3.120
Cost of Completed Jobs		12,80,630
Cost of Finished Goods sold		12,74,000
Selling Expenses		29,250
Office Administration		68,900
Works Oncost allocated to Work-in-Progress		4,74,890
Office Oncost allocated to Work-in-Progress		68,380

Answer :

ENTRIES IN THE COST JOURNAL

		L.F.	Rs.	Rs.
Stores Ledger Control Account	Dr		3,90,000	
To Cost Ledger Control Account				3,90,000
(With the total amount of purchases for the period as ascertained from Financial Books)				
Stores Ledger Control Account ..	Dr.		5,850	
To Cost Ledger Control Account				5,850
(Being the amount of Carriage Inwards from Financial Books.)				
Work-in Progress Account . ..	Dr.		3,58,800	
To Stores Ledger Control Account				3,58,800
(Being the amount of Stores issued.)				
Wages Account	Dr.		4,68,000	
To Cost Ledger Control Account				4,68,000
(Being the amount of Total Wages expended :— Direct .. .. .. 3,46 320 Indirect .. .. 1,21,680.)				

ENTRIES IN THE COST JOURNAL (*Contd.*)

	L.F.	Rs.	Rs.
Work-in-Progress Account .. .. Dr. To Wages Account (Being the amount of Direct Wages allocated to Jobs.)		3,46,320	3,46,320
Works Oncost Account .. .. .. Dr. To Wages Account (Being the amount of Indirect Labour allocated.)		1,21,680	1,21,680
Works Oncost Account .. .. .. Dr. To Cost Ledger Control Account (Being the amount of Works Oncost other than Indirect Wages incorporated from Financial Books.)		3,48,400	3,48,400
Works Oncost Account .. .. .. Dr. To Stores Ledger Control Account (Being the cost of materials used in repairs.)		3,120	3,120
Stock Ledger Control Account .. .. Dr. To Work-in-Progress Account (Being the cost of completed Jobs.)		12,80,630	12,80,630
Cost of Sales Account .. .. .. Dr. To Stock Ledger Control Account (Being the cost of products sold.)		12,74,000	12,74,000
Cost of Sales Account .. .. .. Dr. To Cost Ledger Control Account (Being Selling Oncost in respect of goods sold incorporated from Financial Books.)		29,250	29,250
Office Oncost Account .. .. .. Dr. To Cost Ledger Control Account (Being the amount of Office Administration charges incorporated from Financial Books.)		68,900	68,900
Work-in-Progress Account .. .. Dr. To Works Oncost Account ,, Office Oncost Account (Being the allocation of Works Oncost and Office Oncost to Work-in Progress.)		5,43,270	 4,74,890 68,380
Cost Ledger Control Account .. .. Dr. To Cost of Sales Account (Being transfer of balance from latter Account.)		13,03,250	13,03,250
Works Oncost Account .. .. .. Dr. To Cost Ledger Control Account (Being the transfer of the balance from Works Oncost.)		1,690	1,690
Cost Ledger Control Account .. .. Dr. To Office Oncost Account (Being transfer of the balance from the Office Oncost Account.)		520	520

IN THE COST LEDGER

COST LEDGER CONTROL ACCOUNT

1957		Rs.	1957		Rs.
June 30	To Cost of Sales A/c.: Sales affected ..	13,03,250	Jan. 1	By Balance b/fd. ..	3,71,020
	,, Office Oncost A/c.: Over allocation of Works Expenses ..	520	June 30	,, Stores Ledger Control Account: Purchases ..	3,90,000
	,, Balance c/d. ..	3,79,340		Carriage Inwards ..	5,850
				,, Wages Account .	4,68,000
				,, Works Oncost Account	3,48,400
				,, Office Oncost Account	68,900
				,, Cost of Sales Account	29,250
				,, Sales Expenses: Works Oncost A/c.— Balance Transferred	1,690
	Rs.	16,83,110		Rs.	16,83,110
			1957 July 1	By Balance b/d. ..	3,79,340

WORK IN PROGRESS ACCOUNT

1957		Rs.	1957		Rs
Jan. 1	To Balance b/fd. ..	1,61,200	June 30	By Stock Ledger Control Account: Cost of completed jobs ..	12,80,630
June 30	,, Stores Ledger Control Account: Stores Issued .	3,58,800		,, Balance c/d	1,20,960
	,, Direct Wages Account	3,46,320			
	,, Works Oncost Account	4,74,890			
	,, Office Oncost Account	68,380			
	Rs.	14,09,590		Rs	14,09,590
1957 July 1	To Balance b/d	1,28,960			

STOCK LEDGER CONTROL ACCOUNT

1957		Rs.	1957		Rs.
Jan. 1	To Balance b/fd.	1,26,620	June 30	By Cost of Sales Account	12,74,000
June 30	,, Work-in-Progress A/c. Cost of completed jobs	12,80,630		,, Balance c/d .	1,33,250
	Rs.	14,07,250		Rs.	14,07,250
1957 July 1	To Balance b/d. ..	1,33,250			

STORES LEDGER CONTROL ACCOUNT

1957		Rs.	1957		Rs.
Jan. 1	To Balance b/fd. ..	83,200	June 30	By Work-in-Progress A/c.:	
June 30	„ Cost Ledger Control			Stores Issued ..	3,58,800
	Account:			„ Works Oncost A/c.:	
	Purchases ..	3,90,000		Materials for Repairs	3,120
	Carriage Inwards..	5,850		„ Balance c/d. ..	1,17,130
	Rs.	4,79,050		Rs.	4,79,050
1957					
July 1	To Balance b/d. ..	1,17,130			

WAGES ACCOUNT

1957		Rs.	1957		Rs.
June 30	To Cost Ledger Control		June 30	By Work-in-Progress A/c.:	
	Account ..	4,68,000		Direct Wages ..	3,46,320
				„ Works Oncost A/c.:	
				Indirect Wages ..	1,21,680
	Rs.	4,68,000		Rs.	4,68,000

WORKS ONCOST ACCOUNT

1957		Rs.	1957		Rs.
June 30	To Wages Account:		June 30	By Work-in-Progress A/c.	4,74,890
	Indirect Labour ..	1,21,680			
	„ Stores Ledger Control Account:				
	Materials for Repairs	3,120			
	„ Cost Ledger Control				
	Account ..	3,48,400			
	„ Cost Ledger Control				
	Account:				
	Balance Transferred	1,690			
	Rs.	4,74,890		Rs.	4,74,890

OFFICE ONCOST ACCOUNT

1957		Rs.	1957		Rs.
June 30	To Cost Ledger Control		June 30	By Work-in-Progress A/c.	68,380
	Account ..	68,900		„ Cost Ledger Control	
				Account:	
				Balance Transferred	520
	Rs.	68,900		Rs.	68,900

COST OF SALES ACCOUNT

1957		Rs.	1957		Rs.
June 30	To Stock Ledger Control Account ..	12,74,000	June 30	By Cost Ledger Control Account : Balance Transferred	13,03,250
	„ Cost Ledger Control Account : Sales Expenses ..	29,250			
	Rs.	13,03,250		Rs.	13,03,250

TRIAL BALANCE

	Rs.	Rs.
Cost Ledger Control Account		3,79,340
Work-in-Progress Account	1,28,960	
Stock Ledger Control Account	1,33,250	
Stores Ledger Control Account	1,17,130	
Rs.	3,79,340	3,79,340

Q. 305.

From the following information write up necessary accounts in the Cost Ledger and prepare a final Trial Balance as at 31st December 1955:

	Rs.
Stores (Balance 1-1-1955) .	4,100
Work-in-Progress (Balance 1-1-1955) ..	11,300
Stock of Finished Goods (Balance 1-1-1955)	3,980

The operations for the year ended 31st December 1955 were represented by the following figures:

	Rs.	Rs.
Factory Oncost recovered		37,960
Overhead Expenses incurred		7,810
Cost of Output		1,15,270
Factory Expenses . .		27,670
Stores Purchased		34,210
Wages Productive . .	30,340	
Unproductive ..	10,445	
		40,785
Overhead Oncost recovered .		7,950
Cost of Output sold . . .		1,12,375
Stores Issued		34,875
Inward Carriage		190

On 31st December 1955 the values of the Stocks on hand were: Stores Rs. 3,560; Finished Goods Rs. 6,875; and the Work-in-Progress amounted to Rs. 7,155.

Answer:

COST LEDGER CONTROL ACCOUNT

1955		Rs.	1955		Rs.
Jan./Dec.	To Finished Goods A/c.:		Jan. 1	By Balance b/fd. ..	19,380
	Cost of Output Sold	1,12,375	Jan./Dec.	„ Stores Purchased ..	34,210
Dec. 31	„ Factory Expenses A/c.: Under allocation of Expenses ..	220	„	„ Wages Productive ..	30,340
			„	„ Wages Unproductive..	10,445
			„	„ Factory Expenses ..	27,670
„	„ Balance c/d. ..	17,590	„	„ Inward Carriage ..	190
			„	„ Overhead Expenses ..	7,810
			Dec. 31	„ Overhead Expenses Account: Over-allocation of Expenses ..	140
	Rs.	1,30,185		Rs.	1,30,185
			1956		
			Jan. 1	By Balance b/d. ..	17,590

STORES LEDGER CONTROL ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/fd. ..	4,100	Jan./Dec.	By Work-in-progress Stores issued ..	34,875
Jan./Dec.	„ Purchases ..	34,210	Dec. 31	„ Balance, Stores in hand c/d. ..	3,560
„	„ Inward Carriage ..	190	„	„ Difference written off to Factory Expenses	65
	Rs.	38,500		Rs.	38,500
1956					
Jan. 1	To Balance b/d	3,560			

WORK-IN-PROGRESS ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/fd ..	11,300	Jan./Dec.	By Finished Goods A/c..	
Jan./Dec.	„ Stores Account ..	34,875		Cost of Output ..	1,15,270
„	„ Productive Wages ..	30,340	Dec. 31	„ Balance c/d. ..	7,155
„	„ Factory Oncost ..	37,960			
„	„ Overhead Oncost ..	7,950			
	Rs.	1,22,425		Rs.	1,22,425
1956					
Jan. 1	To Balance b/d. ..	7,155			

FINISHED GOODS ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/fd .	3,980	Jan./Dec.	By Cost Ledger Control Account : Cost of output sold	1,12,375
Jan./Dec.	„ Work-in-progress A/c. Cost of output	1,15,270	Dec. 31	„ Balance c/d ..	6,875
	Rs	1,19,250		Rs.	1,19,250
1956					
Jan. 1	To Balance b/d	6,875			

FACTORY EXPENSES ACCOUNT

1955		Rs	1955		Rs.
Jan./Dec.	To Cost Ledger Control Account .	27,670	Jan./Dec.	By Work-in Progress Oncost charged	37,960
	„ Unproductive Wages	10,445	Dec. 31	„ Cost Ledger Control Account Under allocation transferred ..	220
Dec. 31	„ Difference in Stores, written off	65			
	Rs	38,180		Rs.	38,180

OVERHEAD EXPENSES ACCOUNT

1955		Rs	1955		Rs
Jan./Dec.	To Cost Ledger Control Account	7,810	Jan./Dec.	By Work in Progress Oncost charged	7,950
Dec. 31	„ Cost Ledger Control Account: Over allocation transferred	140			
	Rs	7,950		Rs.	7,950

TRIAL BALANCE AS AT 31st DECEMBER 1955

	Rs	Rs.
Cost Ledger Control Account		17,590
Stores Ledger Control Account	3,560	
Work-in-Progress Account	7,155	
Finished Goods Account	6,875	
Rs	17,590	17,590

Note It has been assumed that the difference on stores is due to normal wastage

Q. 306.

From the following information, you are required to allocate the Works Oncost to the individual cost units on the basis of (*a*) Direct Wages, and (*b*) Direct Labour Hours.

DEPARTMENTAL ALLOCATION OF WORKS EXPENSES ON THE BASIS OF ANNUAL FIGURES

Nature of Expense	Total	Dept. No. 1	Dept. No. 2	Dept. No. 3
	Rs.	Rs.	Rs.	Rs.
(*a*) Building Expense (productive section)	46,000	25,000	17,000	4,000
(*b*) Power Expense	38,000	28,000	8,500	1,500
(*c*) Plant Maintenance and Repairs	53,000	35,000	16,000	2,000
(*d*) Plant Depreciation	54,000	34,500	18,000	1,500
(*e*) Plant Insurance	1,500	800	500	200
(*f*) Supervision	25,500	18,000	6,500	1,000
(*g*) Miscellaneous Supplies	22,000	8,700	8,500	4,800
	2,40,000	1,50,000	75,000	15,000
(*h*) Building Expense (Non-productive section)	25,000	12,000	8,000	5,000
(*i*) Indirect Labour:				
Shop clerical work	12,500	6,000	4,000	2,500
Viewing and testing	24,500	14,000	8,000	2,500
Material handling	21,500	11,500	5,500	4,500
General Labouring	15,500	9,000	3,000	3,500
(*j*) Salaries:				
Management	20,000	13,000	5,000	2,000
Technical Staff	29,000	18,000	7,500	3,500
(*k*) Stores Service	10,000	4,000	3,000	3,000
(*l*) Tool Service	18,500	6,000	4,000	8,500
(*m*) Works Office Expenses	11,500	5,000	3,500	3,000
(*n*) Insurance on works fittings	5,000	2,500	1,000	1,500
(*o*) Depreciation on works fittings	2,000	1,000	500	500
Rs.	4,35,000	2,52,000	1,28,000	55,000

The following are the further particulars:

(*a*) The number of operatives is taken at 1,200 made up of 350 in Department No. 1, 600 in Department No. 2 and 250 in Department No. 3.

(*b*) The number of working days during the year is estimated at 300, and the working hours are 8 per day.

(*c*) From the total number of days, 10 per cent will have to be deducted for short time and idle time.

(*d*) No. 1 Department has 100 machines of similar capacity and class, No. 2 Department has 70 and No. 3 Department has 10.

(*e*) It is assumed that the items (*a*) to (*g*) marked in the statement all relate directly to Plant and Machinery, and those from (*h*) to (*o*) are other expenses of the Works.

(*f*) The direct wages for the year are—Department No. 1 Rs. 1,60,000, Department No. 2 Rs. 2,00,000 and Department No. 3 Rs. 2,50,000.

Answer:

(a) DIRECT WAGES METHOD

Particulars	Total	Dept. No. 1	Dept. No. 2	Dept. No. 3
	Rs	Rs	Rs	Rs.
Direct wages in each Dept	6,10,000	1,60,000	2,00,000	2,50,000
Works Oncost	4 35,000	2,52,000	1,28,000	55,000
Percentage of Works Oncost on Direct Wages ..	71	157%	64%	22%

(b) DIRECT LABOUR HOUR METHOD

Particulars	Total	Dept. No. 1	Dept. No. 2	Dept. No. 3
Estimated Number of Working Hours				
300 days at 8 hours	2,400	2,400	2,400	2,400
Less 10	240	240	240	240
Total Working Hours	2,160	2,160	2,160	2,160
Multiplied by Number of Wage earners	1,200	350	600	250
Total Direct Labour Hours	25,92,000	7,56 000	12,96,000	5,40,000
Work Oncost	4,35,000	2,52,000	1,28,000	55,000
		Rs	Rs	Rs
Oncost Rate per Direct Labour Hour		0-5-4	0-1-7	0-1-7.5

Note. A deduction of 10 per cent is made from the total working days to allow for the loss of a few days annually arising from short time and delays due to breakdowns, repairs to plant, and extra holidays which inevitably arise.

Q. 307.

From the same particulars as given in the previous example, allocate the Works Oncost on the basis of (*a*) Machine Hour, and (*b*) Combination of Machine Hour and Labour Methods.

Answer:

(a) MACHINE HOUR METHOD

Particulars	Dept. No. 1	Dept. No. 2	Dept. No. 3
Total Working Hours	2,160	2,160	2,160
Multiplied by Number of Machines	100	70	10
Total Machine Hours	2,16,000	1,51,200	21,600
Works Oncost	2,52 000	1,28,000	55,000
	Rs.	Rs.	Rs.
Oncost Rate per Machine Hour	1-2-8	0-13-6 5	2-8-9

(b) COMBINATION OF MACHINE HOUR AND DIRECT LABOUR METHOD

Particulars	Dept. No. 1	Dept. No. 2	Dept. No. 3
Total Number of Machine Hours	2,16,000	1,51,200	21,600
	Rs.	Rs.	Rs.
Hourly Machine rate for Expenses (a) to (g)	0-11-1.3	0-7-11	0-11-1.3
	Rs.	Rs.	Rs.
Total Direct Wages .. .	1,60,000	2,00,000	2,50,000
Expenses from (h) to (o) to be allocated on the basis of Direct Wages	1,02,000	53,000	40,000
Percentage on Direct Wages .. .	64%	26.5%	16%

Q. 308.

The following particulars are extracted from the Books of the Swastic Oil Refinery Ltd., for the week ending . ...

Kernels consumed (100 tons) Rs. 45,000

	Crushing	Refining	Finishing
	Rs.	Rs	Rs.
Wages . ..	1,600	1,180	1,175
Power and Steam ..	240	200	300
Repairs and Stores ..	80	..	..
Rent and Taxes ..	100	150	120
Sundry Works Expenses ..	40	50	70

	Rs.
Office and Establishment Charges	690
Sundry Materials for refining	380
Barrels for storing finished oil	4,205

Cake sales 40 tons for Rs. 3,000; Crude oil obtained 55 tons; Sundry bags sold Rs. 180; Residual oil and fats sold for Rs. 180 (4 tons); Refined oil 50 tons; Finished oil stored in barrels 48 tons, and 2 tons sundry sales realised Rs. 220. Establishment Charges are to be apportioned in Rs. 260, Rs. 280 and Rs. 150 to the three processes in order.

You are asked to prepare a Crushing Account, Refining Account and a Finishing Account.

Answer:

THE SWASTIC OIL REFINERY LTD.

Refining Account for the week ending ....

PROCESS NO. 1

CRUSHING ACCOUNT

	Tons	Rs.		Tons	Rs.
To Kernels ..	100	45,000	By Cake Sales Account ..	40	3,000
„ Wages ..		1,600	„ Sundry Sales Account (Bags, etc.) ..		180
„ Power and Steam ..		240	„ Loss in Process ..	5	
„ Repairs and Stores ..		80	„ Transfer of Crude Oil to Refining Account ..	55	44,140
„ Rent and Taxes ..		100			
„ Sundry Works Expenses ..		40			
„ Office Oncost proportion ..		260			
	100	47,320		100	47,320

PROCESS NO. 2

REFINING ACCOUNT

	Tons	Rs.		Tons	Rs.
To Transfer of Crude Oil from Crushing Account ..	55	44,140	By Sundry Sales A/c. Residual Oils and Fats ..	4	180
„ Sundry Materials .		380	„ Loss in Process ..	1	
„ Wages ..		1,180	„ Transfer of Refined Oil to Finishing Process ..	50	46,200
„ Power and Steam ..		200			
„ Rent and Taxes ..		150			
„ Sundry Works Expenses ..		50			
„ Office Oncost proportion ..		280			
	55	46,380		55	46,380

PROCESS NO. 3

FINISHING ACCOUNT

	Tons	Rs.		Tons	Rs.
To Transfer of Refined Oil from Refining Process ..	50	46,200	By Sundry Sales ..	2	220
„ Wages ..		1,175	„ Sales Account (Finished Oil) ..	48	52,000
„ Barrels ..		4,205			
„ Power and Steam ..		300			
„ Rent and Taxes ..		120			
„ Sundry Works Expenses ..		70			
„ Office Oncost proportion ..		150			
	50	52,220		50	52,220

	Total Cost			Process Cost		
Per Ton	Rs.	a.	p.	Rs.	a.	p.
Cost of Raw Material	450	0	0	....		
Crushing Process	....			352	8	9
Crude Oil	802	8	9	....		
Refining Process	....			121	7	3
Refined Oil	924	0	0	....		
Finishing Process	....			159	5	4
Finished Oil	1,083	5	4	....		

Q. 309.

From the following particulars prepare a statement of Cost per Gross of Articles " A " and " B ".

Output during the month was " A " 5,760 Gross and " B " 2,016 Gross.

	Rs.
Raw Materials—Factory—Opening Stock ..	9,156
Purchases during the year	25,704
Closing Stock	11,856
Factory Wages—"A"	10,080
Factory Wages—"B"	3,276
Factory Overhead	8,904
Finishing Wages "A"	4,800
Finishing Wages "B"	1,344
Raw Materials—Finishing—Opening Stock ..	1,728
Purchases during the year	8,088
Closing Stock	2,136
Finishing Charges	4,608
Office Overhead	8,748

Raw Materials in the Factory and Office Overhead are to be apportioned between A and B in the ratio of output; Factory Overhead in the ratio of Factory Wages; Finishing Raw Materials and Finishing Charges in the ratio of Finishing Wages.

State also what profit is made per gross if " A " is sold at Rs. 11 per gross and " B " at Rs. 10-8 per gross.

Answer:

STATEMENT OF COST PER GROSS OF "A" & "B" QUALITY ARTICLES

for the month of ....

—			"A" Output 5,760 Gross		"B" Output 2,016 Gross	
			Factory	Finishing	Factory	Finishing
Factory Raw Materials:		Rs.	Rs.	Rs.	Rs.	Rs.
Opening Stock	..	9,156				
Purchases	..	25,704				
		34,860				
Less: Closing Stock	..	11,856				
		23,004				
A	.. $\frac{23,004 \times 5,760}{7,776}$		17,040			
B	.. $\frac{23,004 \times 2,016}{7,776}$				5,964	
Factory Wages		..	10,080		3,276	
Factory Overhead:						
A	.. $\frac{8,904 \times 10,080}{13,356}$		6,720			
B	.. $\frac{8,904 \times 3,276}{13,356}$				2,184	
Finishing Wages		..		4,800		1,344
Finishing Raw Materials:						
Opening Stock	.. 1,728					
Purchases	.. 8,088					
	9,816					
Less: Closing Stock	.. 2,136					
	7,680					
A	.. $\frac{7,680 \times 4,800}{6,144}$			6,000		
B	.. $\frac{7,680 \times 1,344}{6,144}$					1,680
Finishing Charges:						
A	.. $\frac{4,608 \times 4,800}{6,144}$			3,600		
B	.. $\frac{4,608 \times 1,344}{6,144}$					1,008
		Rs.	33,840	14,400	11,424	4,032

—		"A" Cost per Gross	Amount	"B" Cost per Gross	Amount
		Rs. a. p.	Rs.	Rs. a. p.	Rs.
Factory Process	..	5 14 0	33,840	5 10 8	11,424
Finishing Process	..	2 8 0	14,400	2 0 0	4,032
Office Overhead: "A"	.. 8,748 × $\frac{5,760}{7,776}$	1 2 0	6,480		
"B"	.. 8,748 × $\frac{2,016}{7,776}$			1 2 0	2,268
	Total Cost Rs.	9 8 0	54,720	8 12 8	17,724

Profit on sale per gross for "A" quality is Rs. 11 minus Rs. 9–8–0 = Re. 1–8–0.

Profit on sale per gross for "B" quality is Rs. 10–8–0 minus Rs. 8–12–8 = Re. 1–11–4.

Q. 310.

Cleaners Ltd. manufacture Paint Brushes in three types, namely small, medium and large. Their account for the year ended December 1955 showed the following result:

	Rs.			Rs.
To Materials consumed ..	12,400	By Sales ..		33,000
" Direct Labour ..	7,600	" Stock of Finished Brushes		3,450
" Factory Expenses ..	7,300	" Work-in-Progress:—	Rs.	
" Gross Profit, carried down ..	10,150	Materials	500	
		Labour	250	
		Factory oncost	250	
				1,000
Rs.	37,450		Rs.	37,450
To Office Expenses ..	4,600	By Gross Profit brought down ..		10,150
" Selling Expenses ..	2,300			
" Net Profit ..	3,250			
Rs.	10,150		Rs.	10,150

They have charged out Materials and Labour at actual cost, Factory Oncost at 100 per cent on Labour, and Office and Selling Oncost at 25 per cent on Factory Cost. Finished articles and Work-in-Progress are valued at Factory Cost.

The following figures are taken from their Cost Accounts:

—	Small	Medium	Large
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Average cost of Materials per finished brush	1 0 0	1 4 0	1 8 0
Average cost of Labour per finished brush	0 8 0	0 12 0	1 0 0
Number of finished brushes manufactured	2,000	3,000	4,000
Brushes sold	1,800	2,400	3,600
Sale Price per Brush	3 0 0	4 0 0	5 0 0

Prepare (i) a Cost Summary showing the total profit and profit per Brush sold; and

(ii) a Reconciliation of the profit shown by these Cost Accounts with the Profit and Loss Account which shows a balance of Rs. 3,250.

Answer :

COST SUMMARY

—	Small per Brush	Total	Medium per Brush	Total	Large per Brush	Total	Grand Total
	Rs. a.	Rs.	Rs. a.	Rs. a.	Rs. a.	Rs.	Rs. a.
Materials	1 0	2,000	1 4	3,750 0	1 8	6,000	11,750 0
Labour	0 8	1,000	0 12	2,250 0	1 0	4,000	7,250 0
Prime Cost =	1 8	3,000	2 0	6,000 0	2 8	10,000	19,000 0
Factory Oncost 100 per cent on Labour	0 8	1,000	0 12	2,250 0	1 0	4,000	7,250 0
Factory Cost =	2 0	4,000	2 12	8,250 0	3 8	14,000	26,250 0
Office & Selling Oncost 25 per cent on Factory Cost	0 8	1,000	0 11	2,062 8	0 14	3,500	6,562 8
Total Cost =	2 8	5,000	3 7	10,312 8	4 6	17,500	32,812 8
Selling Price	3 0		4 0		5 0		
Profit per Brush	0 8		0 9		0 10		

Total Profit per Cost Accounts on Brushes sold:

1,800 at Rs. 0-8-0 = Rs. 900; 2,400 at Rs. 0-9-0 = Rs. 1,350;

3,600 at Rs. 0-10-0 = Rs. 2,250.

Total Profit = Rs. 4,500.

FACTORY ONCOST ACCOUNT

	Rs.		Rs.
To Cost Ledger Control Account ..	7,300	By Work-in-Progress ..	7,250
„ Profit and Loss Account (over allocation) ..	200	„ Factory Oncost Suspense Account	250
Rs.	7,500	Rs.	7,500

OFFICE AND SELLING ONCOST ACCOUNT

	Rs. a.		Rs. a.
To Cost Ledger Control Account ..	6,900 0	By Work-in-Progress ..	6,562 8
		„ Profit & Loss Account (under allocation) ..	337 8
Rs.	6,900 0	Rs.	6,900 0

RECONCILIATION STATFMENT OF PROFIT & LOSS

		Rs. a. p.
Profit as per Profit and Loss Account ..		3,250 0 0
Less: Over allocation of Factory Oncost ..		200 0 0
	Rs. a. p.	3,050 0 0
Add: Under allocation of Office and Selling Oncost ..	337 8 0	
„ Apparent wastage of Materials ..	150 0 0	
„ Apparent Idle Time ..	100 0 0	
„ Office and Selling Oncost on unsold Brushes ..	862 8 0	1,450 0 0
200 at Rs. 0 8 0 = Rs. 100 0 0		
600 at Rs. 0 11 0 = Rs. 412 8 0		
400 at Rs. 0 14 0 = Rs. 350 0 0		
Profit as per Cost Accounts =		4,500 0 0

Q. 311.

The Reliance Manufacturing Company Ltd., after a period of experimental work, commence as from 1st January 1954, the production of a standardised article of which they manufacture two Grades 1 and 2.

Both the articles are produced from the same kind of raw material and are sold in the open market at uniform prices: Grade 1 at Rs. 40 per article and Grade 2 at Rs. 25 per article.

They base their sale prices on the following costings prepared by themselves at the beginning of the year from estimated figures:

		Cost per article	
		Grade 1	Grade 2
		Rs.	Rs.
Raw Material		5	3
Wages		15	10
Works Oncost		7·5	5
	Works Cost Rs.	27·5	18
General Oncost	„	2·75	1·8
	Rs.	30·25	19·8

On making up their accounts for the year ended 31st December 1954, their total costs are found to be:

	Grade 1		Grade 2
	Rs.	Rs.	Rs.
Cost of Material used	12,000		17,500
Direct Wages	48,000		45,000
Works Expenses		55,800	
General Expenses		26,745	

During the same period, their sales amounted to Rs. 2,00,000. (Grade 1 Rs. 1,00,000 and Grade 2 Rs. 1,00,000) and their stocks on hand at 31st December 1954 valued at Works Cost as per their costings, were Rs. 31,750 (Grade 1 Rs. 13,750 and Grade 2 Rs. 18,000).

The output during the year was 3,000 articles of Grade 1 and 5,000 of Grade 2.

From the above information, prepare revised Costings showing the cost per article sold during 1954.

Answer :

COST STATEMENT, 1954

Output	Grade 1 3,000 articles		Grade 2 5,000 articles	
	Total	Cost per article	Total	Cost per article
	Rs.	Rs.	Rs.	Rs.
Raw Materials	12,000	4	17,500	3.5
Direct Wages	48,000	16	45,000	9
Prime Cost =	60,000	20	62,500	12.5
Works Oncost	28,800	9.6	27,000	5.4
Works Cost =	88,800	29.6	89,500	17.9
General Oncost	13,320	4.44	13,425	2.685
Cost of Production =	1,02,120	34.04	1,02,925	20.585

Note · Works Oncost has been charged on the basis of Labour, and General Oncost on the basis of Works Cost.

Q. 312.

The Asiatic Manufacturing Company operate three Service Departments and four Producing Departments. The Direct Departmental Expenses of these for the month of January 1956 were as under:

	Rs.		Rs.
Service Department P	3,100	Producing Department A	2,400
,, ,, Q	3,260	,, ,, B	2,580
,, ,, R	1,620	,, ,, C	3,940
		,, ,, D	2,340

The cost of Service Department P is distributed to the other Departments on the basis of total wages.

The total wages were:

	Rs.		Rs.
Service Department Q	1,520	Producing Department B	14,200
,, ,, R	640	,, ,, C	8,640
Producing ,, A	4,800	,, ,, D	6,640

The cost of Service Department Q is distributed to other Departments on a percentage basis.

The percentages of service rendered were:

	Rs.		Rs.
Service Department R	2	Producing Department C	25
Producing ,, A	25	,, ,, D	20
,, ,, B	25		

The cost of Service Department R is distributed to other Departments in proportion to the direct labour-hours in these Departments which were:

	Rs.		Rs.
Producing Department A	3,400	Producing Department C	5,488
„ „ B	14,720	„ „ D	4,560

Prepare a work-sheet showing the distribution of Service Department Costs.

Answer:

WORK SHEET
(Showing Distribution of Service Departments Costs)

	Service Department			Producing Department			
	P	Q	R	A	B	C	D
	Rs.	Rs.	Rs.	Rs.	Rs	Rs.	Rs.
Direct Departmental Expenses ..	3,100	3,260	1,620	2,400	2,580	3,940	2,340
Service Department P ..	3,100	129	55	408	1,208	735	565
„ Q ..		3,389	170	847	847	847	678
„ „ R ..			1,845	223	964	359	299
Total Cost of Producing Departments Rs				3,878	5,599	5,881	3,882

Q. 313.

Following details appear in the Contract Ledger of the Building Contractors Ltd.:

	Stores Issued	Plant Issued	Wages	Dr. Total	Cr. Works Certified
Contract No.:	Rs.	Rs.	Rs.	Rs.	Rs.
1	24,000	14,000	12,000	50,000	40,000
2	34,000	18,000	16,000	68,000	56,000
3	22,000	12,000	10,000	44,000	32,000
4	38,000	24,000	22,000	84,000	72,000
5	28,000	20,000	18,000	66,000	48,000

Following Balances are abstracted from the General Ledger:

General Wages (including Rs. 2,000 for Improvement to Business Premises)	6,000
Salaries (including Rs. 1,600 for salaries of a new draftsman chargeable to a new customer, Messrs. Mafatlal & Co.)	7,080
Repairs to Plant at Works (including Rs. 1,000 chargeable to the suppliers of a new plant, under a letter of Guarantee, Messrs. Bird & Co.)	4,500
Office Expenses (including Rs. 20 paid as Income-tax on the Fees of a Director, Mr. P. Popat) ..	2,220
Fuel, Light and Water	2,400
Office Rent, Rates and Taxes	1,400
Rent and Taxes of Works	2,200
Travelling Expenses	3,400
Carriage on Stores purchased	3,600
Depreciation of Plant on Works	3,800

All the Contractees have paid 75 per cent of the work certified. Draft Journal Entries to transfer the above items to proper accounts, opening separate accounts for Works Expenses and Administrative Expenses and allocating the same over the various contracts on the basis you think best for the allocation of such Indirect Expenses with a view to ascertain the exact cost of each contract.

Answer:

JOURNAL ENTRIES

		L.F.	Rs.	Rs.
	Business Premises Account .. .. .. Dr. To General Wages Account (Being transfer of Wages for improvement to Business Premises from General Wages Account.)		2,000	 2,000
	Mafatlal & Co. .. .. .. Dr. To Salaries Account (Being salaries of a new draftsman, chargeable to the former account, transferred from the latter account.)		1,600	 1,600

JOURNAL ENTRIES (*Contd.*)

	L.F.	Rs.	Rs.
Bird & Co. .. .. .. Dr.		1,000	
To Repairs to Plant a/c.			1,000
(Being repairs chargeable to Bird & Co. under letter of guarantee.)			
P. Popat .. .. .. Dr.		20	
To Office Expenses a/c.			20
(Being Income Tax on P. Popat's fees as director transferred to his account from the latter account, it being presumed that the fees of Directors are not free of tax.)			
Works Expenses Account .. .. .. Dr.		15,700	
To General Wages a/c.			4,000
„ Repairs to Plant at Works			3,500
„ Fuel, Light and Water a/c.			2,400
„ Works Rent and Taxes Account			2,200
„ Carriage Inwards Account			3,600
(Being transfer of various expenses incurred for Works to Works Expenses Account.)			
Administration Expenses Account .. .. Dr.		12,480	
To Salaries Account			5,480
„ Office Expenses Account			2,200
„ Rent and Taxes Account			1,400
„ Travelling Expenses Account			3,400
(Being transfer of various expenses incurred for Office to Administration Expenses Account.)			
Contract No. 1 Account .. .. .. Dr.		605	
„ „ 2 „ .. .. .. „		777	
„ „ 3 „ .. .. .. „		518	
„ „ 4 „ .. .. .. „		1,036	
„ „ 5 „ .. .. .. „		864	
To Depreciation of Plant at Works			3,800
(Being Depreciation on Plant employed at Works charged to the nearest rupee to various contracts in proportion to the value of the Plant issued for each contract.)			
Contract No. 1 Account .. .. .. Dr.		2,523	
„ „ 2 „ .. .. .. „		3,505	
„ „ 3 „ .. .. .. „		2,243	
„ „ 4 „ .. .. .. „		4,205	
„ „ 5 „ .. .. .. „		3,224	
To Works Expenses Account			15,700
(Being Works Expenses charged to the nearest rupee to various contracts in proportion to their respective Prime Cost.)			
Contract No. 1 Account .. .. .. Dr.		2,005	
„ „ 2 „ .. .. .. „		2,782	
„ „ 3 „ .. .. .. „		1,782	
„ „ 4 „ .. .. .. „		3,344	
„ „ 5 „ .. .. .. „		2,567	
To Adminstrative Expenses Account			12,480
(Being administrative expenses charged to nearest rupee to various contracts in proportion of Works Cost of each of the Contracts.)			

Q. 314.

From the undermentioned information, you are requested to prepare necessary Ledger Accounts in the Cost Ledger and a final Trial Balance:

	Rs.
Stores purchased	35,625
Manufacturing Wages	15,450
Sales	46,875
Wages for Plant Repair	375
Stores issued for Plant Repairs	150
Stores issued to Production	26,625
Wages for Stores Department	495
Selling Expenses	1,540
Stores Returned to Suppliers	525
Indirect Wages	1,950
Normal Wastage of Stores	190
Wages for Repairs to Building	190
Normal Idle Time	525
Stores issued for Repairs to Building	75
Works Oncost	3,750
General Oncost	1,050
Work-in-Progress (balance at end)	4,500
Completed Stock	1,875
Stores (balance on hand)	7,900

Answer:

COST LEDGER CONTROL ACCOUNT

	Rs.		Rs.
To Sales ..	46,875	By Purchases ..	35,625
„ Stores returned to Suppliers ..	525	„ Selling Expenses ..	1,540
„ Balance c/d. ..	14,275	„ Wages ..	18,985
		„ Costing Profit & Loss Account ..	5,525
Rs.	61,675	Rs.	61,675
		By Balance b/d. ..	14,275

STORES LEDGER CONTROL ACCOUNT

	Rs.		Rs.
To Purchases ..	35,625	By Plant Repairs ..	150
		„ Works in Progress ..	26,625
		„ Stores Returned to Suppliers ..	525
		„ Normal Wastage ..	190
		„ Works Expenses ..	75
		„ Shortage ..	160
		„ Balance c/d. ..	7,900
Rs.	35,625	Rs.	35,625
To Balance b/d. ..	7,900		

WORK-IN-PROGRESS ACCOUNT

	Rs.		Rs.
To Stores ..	26,625	By Completed Stock ..	42,375
„ Wages ..	15,450	„ Balance c/d. ..	4,500
„ Works Oncost ..	3,750		
„ General Oncost ..	1,050		
Rs.	46,875	Rs.	46,875
To Balance b/d. ..	4,500		

WAGES ACCOUNT

	Rs.		Rs.
To Cost Ledger Control ..	18,985	By Works-in-Progress ..	15,450
		„ Works Expenses: –	
		Plant Repairs ..	375
		Stores Dept. ..	495
		„ Indirect Wages ..	1,950
		„ Repairs to Building ..	190
		„ Normal Idle Time ..	525
Rs.	18,985	Rs.	18,985

WORKS EXPENSES ACCOUNT

	Rs.		Rs.
To Wages:—		By Works-in-Progress ..	3,750
Plant Repairs ..	375	„ Costing Profit & Loss Account under allocation written off ..	360
Stores Wages ..	495		
Indirect Wages ..	1,950		
Repairs to Building ..	190		
Normal Idle Time ..	525		
„ Stores:—			
Plant Repairs ..	150		
Normal Wastage .	190		
Repairs to Building ..	75		
Shortage ..	160		
Rs.	4,110	Rs.	4,110

GENERAL ONCOST ACCOUNT

	Rs.		Rs.
To Costing Profit & Loss Account ..	1,050	By Works-in-Progress ..	1,050

FINISHED STOCK ACCOUNT

	Rs.		Rs.
To Works-in-Progress ..	42,375	By Cost of Sales ..	40,500
		„ Balance c/d. ..	1,875
Rs.	42,375	Rs.	42,375
To Balance b/d. ..	1,875		

COST OF SALES ACCOUNT

	Rs.		Rs.
To Selling Expenses ..	1,540	By Sales ..	46,875
„ Finished Stock ..	40,500		
„ Profit transferred to Costing Profit & Loss Account ..	4,835		
Rs.	46,875	Rs.	46,875

COSTING PROFIT & LOSS ACCOUNT

	Rs.		Rs.
To Works Expenses under allocation..	360	By Cost of Sales Account ..	4,835
„ Cost Ledger Control Account ..	5,525	„ General Oncost Account ..	1,050
Rs.	5,885	Rs.	5,885

TRIAL BALANCE

As at ....

	Rs.	Rs.
Cost Ledger Control Account		14,275
Stores Ledger Control Account	7,900	
Finished Stock Account	1,875	
Works-in-Progress Account	4,500	
Rs.	14,275	14,275

Note: Difference in balance of stores has been taken as shortage and charged to works expenses. No information is given regarding expenses covered by General Oncost.

Q. 315.

From the following particulars, prepare Control Accounts of the Costing System showing the cost of finished goods.

The Accounts to be opened are:

(1) Administration Charges Account,
(2) Works Charges Account,
(3) Manufacturing Account,
(4) Trial Balance,
(5) Stores Ledger Account,
(6) General (Finance) Control Account,
(7) Stores Adjustment Account,
(8) Wages Account, and
(9) Stock Ledger Account.

	Rs.
Works Charges	6,600
Stores in hand	5,970
Sales at Cost	44,700
Purchase of Stores	27,900
Work-in-progress at end of period	4,800
Works Oncost charged out	6,960
Administration Oncost incurred	2,550
Stores Issued	21,600
Depreciation of Stores	330
Wages—Direct	20,970
Repairs to Works (Works Charges Account) ..	360
Administration Oncost charged out	2,400
Wages—Indirect	750

Answer :

STORES LEDGER ACCOUNT

	Rs.		Rs.
To Finance Control Account : Purchases ..	27,900	By Manufacturing Account : Stores Issued ..	21,600
		„ Stores Adjustment Account : Depreciation ..	330
		„ Stores on Hand, c/d. ..	5,970
Rs.	27,900	Rs.	27,900
To Stores on Hand, b/d. ..	5,970		

MANUFACTURING ACCOUNT

	Rs.		Rs.
To Stores Ledger Account : Stores Issued ..	21,600	By Works Charges : Repairs to Works ..	360
„ Wages Account : Direct Wages ..	20,970	„ Stock Ledger Account : Finished Goods at Cost ..	46,770
„ Works Charges Account : Oncost Charged ..	6,960	„ Work-in-Progress, c/d. ..	4,800
„ Administration Charges Account : Oncost Charged ..	2,400		
Rs.	51,930	Rs.	51,930
To Work-in-Progress, b/d. ..	4,800		

STOCK LEDGER ACCOUNT

	Rs.		Rs.
To Manufacturing Account: Finished Goods ..	46,770	By Finance Control Account: Sales at Cost ..	44,700
		,, Stock on Hand, c/d. ..	2,070
Rs.	46,770	Rs.	46,770
To Stock on Hand, b/d. ..	2,070		

GENERAL (FINANCE) CONTROL ACCOUNT

	Rs.		Rs.
To Stock Ledger Account: Sales at Cost ..	44,700	By Stores Ledger Account: Purchases ..	27,900
,, Balance c/d. ..	14,070	,, Wages Account: Wages Paid ..	21,720
		,, Works Charges Account: Expenditure ..	6,600
		,, Administration and Distribution Charges Account: Expenditure ..	2,550
Rs.	58,770	Rs.	58,770
		By Balance, b/d. ..	14,070

STORES ADJUSTMENT ACCOUNT

	Rs.		
To Stores Ledger Account: Depreciation of Stores ..	330		

WAGES ACCOUNT

	Rs.		Rs.
To Finance Control Account: Wages Paid ..	21,720	By Manufacturing Account: Direct Wages ..	20,970
		,, Works Charges Account: Indirect Wages ..	750
Rs.	21,720	Rs.	21,720

WORKS CHARGES ACCOUNT

	Rs.		Rs.
To Finance Control Account: Expenditure ..	6,600	By Manufacturing Account: Oncost Charged ..	6,960
,, Wages Account: Indirect Wages ..	750	,, Balance c/d. ..	750
,, Manufacturing Account: Repairs ..	360		
Rs.	7,710	Rs.	7,710
To Balance b/d. ..	750		

ADMINISTRATION CHARGES ACCOUNT

		Rs.			Rs.
To Finance Control Account:			By Manufacturing Account:		
Expenditure	..	2,550	Oncost Charged	..	2,400
			„ Balance, c/d.	..	150
	Rs.	2,550		Rs.	2,550
To Balance, b/d.	..	150			

TRIAL BALANCE

		Rs.	Rs.
Stores Ledger Account—Stores on Hand	..	5,970	
Manufacturing Account—Work-in-Progress	..	4,800	
Stock Ledger Account—Stock on hand	.	2,070	
General (Finance) Control Account	..		14,070
Stores Adjustment Account—Depreciation	..	330	
Works Charges Account—Oncost Undercharged	..	750	
Administration Charges Account—Oncost Undercharged	..	150	
	Rs.	14,070	14,070

Notes (1) The Balance on the Works Charges Account and the Administration Charges Account should be transferred to the Finance Control Account after adjustment, if any, for expense applicable to Work-in-Progress, but not yet charged thereto

(2) If the depreciation of stores is normal, the amount thereof should be transferred to Works Charges Account

Q. 316.

The manufacturing operations of Pure Products Ltd. involve three distinct processes in connection with the same unit. The output of Process P is charged to process Q at a profit of 25 per cent on cost, and the output of process Q is charged to process R on similar basis. The completed product is transferred into stock at a price which gives Process R a profit of 25 per cent. From the following particulars, prepare Process Cost Accounts and Finished Goods Account. Stocks in each process have been valued at prime cost.

Process		P	Q	R
		Rs.	Rs.	Rs.
Material consumed ..	..	14,000	21,000	7,000
Labour	..	21,000	14,000	28,000
Closing Stock ..	..	7,000	14,000	21,000

Sales........Rs. 1,26,000

Closing Stock of Finished Products amounts to Rs. 14,000

Show also the actual realised profit to be taken to the credit of the Profit and Loss Account.

Answer:

PROCESS P

	Rs.		Rs.
To Materials ..	14,000	By Stock ..	7,000
„ Labour ..	21,000	„ Transferred to Process Q ..	35,000
„ Profit ..	7,000		
Rs.	42,000	Rs.	42,000

PROCESS Q

	Rs.		Rs.
To Transferred from Process P ..	35,000	By Stock ..	14,000
„ Materials ..	21,000	„ Transferred to Process R ..	70,000
„ Labour ..	14,000		
„ Profit ..	14,000		
Rs.	84,000	Rs.	84,000

PROCESS R

	Rs.		Rs.
To Transferred from Process Q ..	70,000	By Stock ..	21,000
„ Materials ..	7,000	„ Finished Goods ..	1,05,000
„ Labour ..	28,000		
„ Profit ..	21,000		
Rs.	1,26,000	Rs.	1,26,000

FINISHED GOODS ACCOUNT

	Rs.		Rs.
To Transferred from Process R ..	1,05,000	By Sales ..	1,26,000
„ Profit ..	35,000	„ Stock ..	14,000
Rs.	1,40,000	Rs.	1,40,000

Calculation of Reserve to be carried forward as unrealised profit:

	Reserve Rs.
The stock of process Q, viz. Rs. 14,000, consists partly of product received from process P, viz. Rs. 35,000, and partly of materials and labour expended upon such product by process Q, viz. Rs. 35,000. Therefore 50% of the stock of Process Q, viz. Rs. 14,000, is represented by the product of process P. As the output of process P has been charged to process Q at 25 per cent above cost, i.e. 20 per cent of the transfer price, 20 per cent of Rs. 7,000 (i.e. 50 per cent of Rs. 14,000) represents unrealised profits	1,400

Reserve Rs.

The stock of process R, viz. Rs. 21,000, consists partly of product received from process Q, viz. Rs. 70,000, and partly of materials and labour expended upon such product by process R, viz. Rs. 35,000. Therefore 66-2/3 per cent of the stock of process R, viz. Rs. 21,000, is represented by the product of process Q. As the output of process Q has been charged to process R at 25 per cent above cost, i.e. 20 per cent of the transfer price, 20 per cent of Rs. 14,000 (i.e. 66-2/3 per cent of Rs. 21,000) represents unrealised profit 2,800

As a proportion of the stock of process R originated in process P, where a prior profit was added, a further reserve is also required.

The prime cost in Process Q of the product included in stock of process R was 66-2/3 per cent of Rs. 21,000—equal to Rs. 14,000, less the profit added by Process Q Rs. 2,800 = Rs. 11,200. Of this sum 50 per cent represents the product of process P. The output of process P has been charged to process Q at 25 per cent above cost, i.e. 20 per cent above transfer price, and therefore 20 per cent of Rs. 5,600 (i.e. 50 per cent of Rs. 11,200) represents unrealised profit of process P 1,120

The finished stock is composed of products of processes P, Q and R.

The stock of finished goods, viz. Rs. 14,000—consists of product received from process R and this includes 20 per cent profit. This unrealised profit is 2,800

The prime cost of this stock in process R was therefore Rs. 14,000 —Rs. 2,800 = Rs. 11,200.

Of this sum 66-2/3 per cent represents the product of process P, i.e. Rs. 7,467. Process Q charged its output to process R at a profit of 20 per cent on the transfer price, and therefore 20 per cent of Rs. 7,467 1,493

The prime cost of the proportion of the stock which originated in process Q was Rs. 7,467 — Rs. 1,493 = Rs. 5,974.

Of this 50 per cent represents product of process P, i.e. Rs. 2,987.

Process P has charged its output to process Q at 20 per cent on the transfer price, and therefore 20% of Rs. 2,987 = Rs. 597 represents unrealised profit 597

Rs. 10,210

The actual realised profit to be taken to the credit of the Profit and Loss Account would thus be calculated as under:

	Rs.
Profit from Process P	7,000
„ „ „ Q	14,000
„ „ „ R	21,000
„ on Sale of finished stock	35,000
	77,000
Less: Reserve for unrealised profit	10,210
Actual Profit Realised	66,790

Q. 317.

X Y Z Ltd. are the manufacturers of a standard product. Their Trading and Profit and Loss Account appears as under:

TRADING AND PROFIT & LOSS ACCOUNT

For the year ended 30th June 1955

	Rs.		Rs.
To Finished Stock: 1st July 1954 (6,000 articles) ..	14,940	By Sales: (90,000 articles) ..	2,92,500
„ Raw Materials Consumed ..	1,29,885	„ Finished Stock: 30th June 1955 (4,500 articles) ..	11,205
„ Carriage Inwards ..	1,275	„ Work-in-Progress ..	1,989
„ Direct Wages ..	43,218		
„ Gross Profit c/d. ..	1,16,376		
Rs.	3,05,694	Rs.	3,05,694
To Advertising ..	15,480	By Gross Profit b/d. ..	1,16,376
„ Travellers' Salaries & Commission..	9,630	„ Interest & Dividend on Investment ..	1,830
„ Directors' Fees: (Works, Rs. 3,000; Office, Rs. 3,000; Selling, Rs. 3,600) ..	9,600		
„ Office Staff Salaries ..	6,342		
„ Indirect Factory Wages ..	5,067		
„ Motor Van Expenses ..	4,596		
„ Factory Rent ..	4,680		
„ Debenture Redemption Sinking Fund ..	3,000		
„ Depreciation of Plant & Machinery	2,868		
„ Showroom Rent ..	2,250		
„ Office Rent ..	1,725		
„ Carriage Outwards ..	1,560		
„ Interest on Loans ..	1,500		
„ Bad Debts ..	1,269		
„ Depreciation of Delivery Vans ..	1,260		
„ Factory Lighting & Power ..	1,062		
„ Packing Charges ..	930		
„ Sundry Factory Expenses ..	930		
„ Preliminary Expenses ..	1,050		
„ Showroom Lighting ..	768		
„ Insurance: (Factory, Rs. 450; Office, Rs. 75; Showrooms, Rs. 180) ..	705		
„ Loss on Sale of Investments ..	555		
„ Audit Fee ..	630		
„ General Office Expenses ..	375		
„ Printing & Stationery ..	330		
„ Repairs: (Works, Rs. 75; Office, Rs. 225)..	300		
„ Depreciation of Office Furniture ..	300		
„ Telephone: (Office, Rs. 108; Showrooms, Rs. 81) ..	189		
„ Cleaning: (Office, Rs. 75; Showrooms, Rs. 105) ..	180		
„ Legal Charges: (Collection of Bad Debts) ..	126		
„ Net Profit, c/d. ..	38,949		
Rs.	1,18,206	Rs.	1,18,206

The work in progress at 30th June 1955 was valued as follows:

	Rs.
Materials	1,065
Wages	648
Works Expenses	276
	1,989

The following information is extracted from the Cost Accounts:

(*a*) The net profit for the year as shown by the Cost of Sales Account was Rs. 44,400.

(*b*) Production has been charged with works oncost at the rate of Rs. 20 per 100 Articles, and with office oncost at Rs. 15 per 100 Articles.

(*c*) Selling oncost has been charged to production sold at Rs. 45 per 100 Articles.

(*d*) For costing purposes, only Works Oncost has been considered while valuing Opening and Closing Stock of Finished Goods, whereas in the Financial Accounts Office Oncost has also been added.

Prepare separate Works Expenses and Selling Expenses Accounts. Show also the Reconciliation of the Cost and Financial Accounts embodying the main causes of difference.

WORKS EXPENSES ACCOUNT

	Rs.		Rs.
To Cost Ledger Control Account:		By Work-in-progress Account:	
Factory Rent ..	4,680	Works oncost at Rs. 20 per 100 articles on 88,500 articles ..	17,700
Indirect Factory Wages ..	5,067	,, Works Oncost Suspense Account..	276
Factory Lighting & Power ..	1,062	,, Costing Profit & Loss Account:	
Depreciation of Plant & Machinery	2,868	Under-allocation of Expenses transferred ..	156
Sundry Factory Expenses ..	930		
Insurance ..	450		
Repairs ..	75		
Directors' Fees ..	3,000		
Rs.	18,132	Rs.	18,132

OFFICE EXPENSES ACCOUNT

	Rs.		Rs.
To Cost Ledger Control Account:		By Work-in-progress Account:	
Office Staff Salaries ..	6,342	Office oncost at Rs. 15 per 100 articles on 88,500 articles ..	13,275
Office Rent ..	1,725		
Printing & Stationery ..	330		
Depreciation of Office Furniture ..	300		
Insurance ..	75		
Repairs ..	225		
Telephone ..	108		
Cleaning ..	75		
General Office Expenses ..	375		
Audit Fee ..	630		
Directors' Fees ..	3,000		
Costing Profit & Loss Account: Over-allocation of expenses transferred ..	90		
Rs.	13,275	Rs.	13,275

SELLING EXPENSES ACCOUNT

	Rs.		Rs.
To Cost Ledger Control Account:		By Cost of Sales Account:	
Insurance ..	180		
Telephone ..	81	Selling oncost charged to production sold at Rs. 45 per 100 articles on 90,000 articles ..	40,500
Cleaning ..	105	,, Costing Profit & Loss Account:	
Travellers' Salaries & Commission..	9,630	Under-allocation of expenses transferred ..	1,335
Motor Van Expenses ..	4,596		
Depreciation of Delivery Vans ..	1,260		
Carriage & Freight Outwards ..	1,560		
Packing Charges ..	930		
Bad Debts ..	1,269		
Showroom Rent ..	2,250		
Showroom Lighting ..	768		
Legal Charges:			
(Collection of bad debts) ..	126		
Directors' Fees ..	3,600		
Advertising ..	15,480		
Rs.	41,835	Rs.	41,835

RECONCILIATION STATEMENT

		Rs.	Rs.
Profit as per Cost Accounts			**44,400**
Add: Over-allocation of Office Expenses		90	
„ Interest & Divident on Investments		1,830	
„ Office Oncost applicable to opening Stock of finished goods $6{,}000 \times \frac{15}{100}$		900	2,820
			47,220
Less: Under-allocation of Works Expenses		156	
„ Under-allocation of Selling Expenses		1,335	
„ Amounts not charged in Cost Accounts:	Rs.		
Interest on Loans	1,500		
Loss on Sale of Investments	555	2,055	
„ Appropriations of Profit:			
Preliminary Expenses	1,050		
Debenture Redemption Sinking Fund	3,000	4,050	
„ Office Oncost applicable to closing stock $4{,}500 \times \frac{15}{100}$		675	8,271
Profit as per Financial Accounts =			38,949

Note The stock of total articles produced is ascertained as under.

	Number
Article Sold	90,000
Add: Closing Stock	4,500
	94,500
Less: Opening Stock	6,000
Articles produced during the Year	88,500

Q. 318.

The Trial Balances of The Indian Chemical Co. Ltd. as at 31st December 1954 were as under:

COST LEDGER

	Rs.	Rs.
Cost Ledger Control Account		**28,920**
Stores Ledger Control Account	**28,920**	
Rs.	28,920	28,920

FINANCIAL LEDGER

	Rs.	Rs.
Creditors Account		15,520
Capital Account		10,00,000
Stores Account	28,920	
Debtors Account	11,550	
Bank Account	22,360	
Machinery Account	8,92,690	
Furniture Account	60,000	
Rs.	10,15,520	10,15,520

The following transactions took place during the year 1955:

		Rs.
Stores charged to Production		2,03,120
Sales		4,93,960
Stores purchased on credit		2,04,170
Paid to Suppliers		2,95,170
Purchases for Special Job (credit)		3,940
Productive Wages		1,15,840
Wages charged to Production		1,12,440
Received from customers		4,88,590
Purchases for works expenses (credit)		66,790
Indirect Wages		11,830
Works Expenses paid		11,490
Purchases for Office Expenses (credit)		13,510
Office Expenses paid		26,450
Purchases for selling Expenses (credit)		9,770
Selling Expenses paid		12,670
Financial Expenses paid		8,770
Stores in hand at 31–12–1955		24,110
Work-in-Progress (valued at prime cost at 31–12–55)		
Stores	Rs. 10,140	
Wages	Rs. 5,510	
		15,650
Finished stock on hand at 31–12–55		10,850

Works expenses were charged to production on the basis of 80% of the Wages, Office Expenses at 10% of Works Cost and Selling Expenses at 5% of Sales Price.

During the year, additions were made to Machinery by the Company's own workmen as under:

	Rs.	Rs.
Materials	3,980	
Wages	1,860	
		5,840

You are requested to enter the above transactions in the Financial Ledger and prepare Trading and Profit and Loss Account for the year ended 31-12-1955. The transactions should also be entered in the Cost Ledger, and the profit shown in the Financial Ledger is to be reconciled with that in the Cost Ledger.

Answer :

ENTRIES IN FINANCIAL LEDGER

STORES ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/d. ..	28,920	Dec. 31	By Trading A/c. ..	28,920
Dec. 31	To Trading A/c. ..	24,110	Dec. 31	By Balance c/d. ..	24,110
1956 Jan. 1	To Balance b/d. ..	24,110			

WORK-IN-PROGRESS ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Trading A/c. ..	15,650	Dec. 31	By Balance c/d. ..	15,650
1956 Jan. 1	To Balance b/d. ..	15,650			

FINISHED STOCK ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Trading A/c. ..	10,850	Dec. 31	By Balance c/d. ..	10,850
1956 Jan. 1	To Balance b/d. ..	10,850			

MACHINERY ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/d. ..	8,92,690	Dec. 31	By Balance c/d. ..	8,98,530
Dec. 31	„ Wages ..	1,860			
„	„ Stores ..	3,980			
	Rs.	8,98,530		Rs.	8,98,530
1956 Jan. 1	To Balance b/d. ..	8,98,530			

OFFICE FURNITURE ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/d. ..	60,000	Dec. 31	By Balance c/d. ..	60,000
1956 Jan. 1	To Balance b/d. ..	60,000			

CREDITORS' ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cash	2,95,170	Jan. 1	By Balance b/d.	15,520
„	„ Balance c/d.	18,530	Dec. 31	„ Stores Purchases	2,04,170
			„	„ Purchases for Special Jobs	3,940
			„	„ Works Expenses	66,790
			„	„ Office Expenses	13,510
			„	„ Selling Expenses	9,770
	Rs.	3,13,700		Rs.	3,13,700
			1956 Jan. 1	By Balance b/d.	18,530

DEBTORS' ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/d.	11,550	Dec. 31	By Cash	4,88,590
Dec. 31	„ Sales	4,93,960	„	„ Balance c/d.	16,920
	Rs.	5,05,510		Rs.	5,05,510
1956 Jan. 1	To Balance b/d.	16,920			

STORES PURCHASES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Creditors' A/c.	2,04,170	Dec. 31	By Machinery A/c.	3,980
			„	„ Trading A/c.	2,00,190
	Rs.	2,04,170		Rs.	2,04,170

PURCHASE FOR SPECIAL JOBS

1955		Rs.	1955		Rs.
Dec. 31	To Creditors' A/c.	3,940	Dec. 31	By Trading A/c.	3,940

DIRECT WAGES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cash A/c.	1,15,840	Dec. 31	By Machinery A/c.	1,860
			„	„ Trading A/c.	1,13,980
	Rs.	1,15,840		Rs.	1,15,840

INDIRECT WAGES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cash	11,830	Dec. 31	By Trading A/c.	11,830

WORKS EXPENSES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Creditors' A/c.	66,790	Dec. 31	By Trading A/c.	78,280
„	„ Cash A/c.	11,490			
	Rs.	78,280		Rs.	78,280

OFFICE EXPENSES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Creditors	13,510	Dec. 31	By Profit & Loss A/c.	39,960
„	„ Cash	26,450			
	Rs.	39,960		Rs.	39,960

SELLING EXPENSES

1955		Rs.	1955		Rs.
Dec. 31	To Creditors	9,770	Dec. 31	By Profit & Loss A/c.	22,440
„	„ Cash	12,670			
	Rs.	22,440		Rs.	22,440

FINANCIAL EXPENSES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cash	8,770	Dec. 31	By Profit & Loss A/c.	8,770

SALES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Trading A/c.	4,93,960	Dec. 31	By Debtors' A/c.	4,93,960

CAPITAL ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Balance c/d.	10,36,260	Jan. 1	By Balance b/d.	10,00,000
			Dec. 31	„ Profit & Loss A/c.	36,260
	Rs.	10,36,260		Rs.	10,36,260
			1956		
			Dec. 31	By Balance b/d.	10,36,260

SUMMARY OF CASH TRANSACTIONS

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/fd.	22,360	Dec. 31	By Creditors' A/c.	2,95,170
Dec. 31	„ Debtors' A/c.	4,88,590	„	„ Productive Wages A/c.	1,15,840
			„	„ Indirect Wages A/c.	11,830
			„	„ Works Expenses A/c.	11,490
			„	„ Office Expenses A/c.	26,450
			„	„ Selling Expenses	12,670
			„	„ Financial Expenses	8,770
			„	„ Balance c/d.	28,730
	Rs.	5,10,950		Rs.	5,10,950
1956					
Jan. 1	To Balance b/d.	28,730			

TRADING AND PROFIT & LOSS ACCOUNT

For the year ended 31st December 1955

	Rs.			Rs.
To Stores Account 1-1-1955	28,920	By Sales		4,93,960
„ Purchases for Stores	2,00,190	„ Closing Stock 31-12-1955:—		
„ Purchases for Special Jobs	3,940	Stores	24,110	
„ Direct Wages	1,13,980	Finished Stock	10,850	
„ Indirect Wages	11,830	Work-in-Progress	15,650	
„ Works Expenses	78,280			50,610
„ Gross Profit transferred to Profit & Loss Account	1,07,430			
Rs.	5,44,570	Rs.		5,44,570
To Office Expenses	39,960	By Gross Profit transferred from Trading Account		1,07,430
„ Selling Expenses	22,440			
„ Financial Expenses	8,770			
„ Net Profit transferred to Capital Account	36,260			
Rs.	1,07,430	Rs.		1,07,430

ENTRIES IN COST LEDGER

COST LEDGER CONTROL ACCOUNT

1955			Rs.	1955			Rs.
Dec. 31	To Cost of Sales A/c. ..		4,93,960	Jan. 1	By Balance b/fd. ..		28,920
"	" Plant Extension:			Dec. 31	" Stores Ledger Control A/c.		2,04,170
	Materials ..	3,980		"	" Work-in-Progress A/c. ..		3,940
	Wages ..	1,860		"	" Wages A/c. ..		1,15,840
			5,840	"	" Works Expenses ..		78,280
"	" Balance c/d. ..		57,024	"	" Indirect Wages ..		11,830
				"	" Office Expenses:		
					Credit ..	13,510	
					Paid ..	26,450	
							39,960
				"	" Selling Expenses:		
					Credit ..	9,770	
					Paid ..	12,670	
							22,440
				"	" Costing Profit & Loss A/c.		51,444
	Rs.		5,56,824		Rs.		5,56,824
				1956			
				Jan. 1	By Balance b/d. ..		57,024

STORES LEDGER CONTROL ACCOUNT

1955		Rs.	1955		Rs.
Jan. 1	To Balance b/fd. ..	28,920	Dec. 31	By Work-in-Progress A/c. ..	2,03,120
Dec. 31	" Cost Ledger Control A/c.	2,04,170	"	" Plant & Machinery A/c.: Works Expenses A/c. ..	3,980
			"	" Difference in Stores: (Transferred to Works Expenses) ..	1,880
			"	" Balance c/d. ..	24,110
	Rs.	2,33,090		Rs.	2,33,090
1956					
Jan. 1	To Balance b/d. ..	24,110			

COST OF SALES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Finished Stock Ledger Control Account ..	4,17,483	Dec. 31	By Cost Ledger Control A/c.: Sales ..	4,93,960
"	" Selling Expenses ..	24,698			
"	" Costing Profit & Loss A/c.	51,779			
	Rs.	4,93,960		Rs.	4,93,960

WORK-IN-PROGRESS ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cost Ledger Control A/c.	3,940	Dec. 31	By Finished Stock Ledger Control A/c. ..	4,28,333
„	„ Stores Ledger Control A/c.	2,03,120	„	„ Balance c/d. ..	15,650
„	„ Wages A/c. ..	1,12,440			
„	„ Works Expenses ..	85,544			
„	„ Office Expenses ..	38,939			
	Rs.	4,43,983		Rs.	4,43,983
1956					
Jan. 1	To Balance b/d. ..	15,650			

WAGES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cost Ledger Control A/c.:		Dec. 31	By Work-in-Progress A/c. ..	1,12,440
	Direct ..	1,15,840	„	„ Plant & Machinery A/c...	1,860
	Inirect ..	11,830	„	„ Works Expenses A/c. ..	11,830
			„	„ „ „ „ : Normal Idle Time ..	1,540
	Rs.	1,27,670		Rs.	1,27,670

WORKS EXPENSES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cost Ledger Control A/c.	78,280	Dec. 31	By Work-in-Progress A/c. ..	85,544
„	„ Wages A/c. ..	11,830	„	„ Works Oncost Suspense Account ..	4,408
„	„ Stores Ledger Control A/c.: (Difference in Stores) ..	1,880	„	„ Costing Profit & Loss A/c.	3,578
„	„ Wages A/c.: Normal Idle Time ..	1,540			
	Rs.	93,530		Rs.	93,530

OFFICE EXPENSES ACCOUNT

1955		Rs.	1955		Rs.
Dec. 31	To Cost Ledger Control A/c	39,960	Dec. 31	By Work-in-Progress A/c. ..	38,939
„	„ Costing Profit & Loss A/c	985	„	„ Office Oncost Suspense Account ..	2,006
	Rs.	40,945		Rs.	40,945

SELLING EXPENSES ACCOUNT

		Rs.			Rs.
1955 Dec. 31	To Cost Ledger Control A/c.	22,440	1955 Dec. 31	By Cost of Sales A/c. ..	24,698
"	" Costing Profit & Loss A/c.	2,258			
	Rs.	24,698		Rs.	24,698

FINISHED STOCK LEDGER CONTROL ACCOUNT

		Rs.			Rs.
1955 Dec. 31	To Work-in-Progress ..	4,28,333	1955 Dec. 31	By Cost of Sales A/c. ..	4,17,483
			"	" Balance c/d. ..	10,850
	Rs.	4,28,333		Rs.	4,28,333
1956 Jan. 1	To Balance b/d. ..	10,850			

PLANT & MACHINERY ACCOUNT

		Rs.			Rs.
1955 Dec. 31	To Stores Ledger Control A/c.	3,980	1955 Dec. 31	By Cost Ledger Control A/c.	5,840
"	" Wages A/c. ..	1,860			
	Rs.	5,840		Rs.	5,840

WORK ONCOST SUSPENSE ACCOUNT

		Rs.			Rs.
1955 Dec. 31	To Works Expenses A/c. ..	4,408	1955 Dec. 31	By Balance c/d. ..	4,408
1956 Jan. 1	To Balance b/d. ..	4,408			

OFFICE ONCOST SUSPENSE ACCOUNT

		Rs.			Rs.
1955 Dec. 31	To Office Expenses A/c. ..	2,006	1955 Dec. 31	By Balance c/d. ..	2,006
1956 Jan. 1	To Balance b/d. ..	2,006			

COSTING PROFIT & LOSS ACCOUNT

		Rs.			Rs.
1955 Dec. 31	To Works Expenses A/c. ..	3,578	1955 Dec. 31	By Office Expenses ..	985
	" Cost Ledger Control A/c.	51,444		" Selling Expenses ..	2,258
				" Cost of Sales A/c. ..	51,779
	Rs.	55,022		Rs.	55,022

COST LEDGER TRIAL BALANCE

As at 31st December 1955

	Rs.	Rs.
Cost Ledger Control Account		57,024
Stores Ledger Control Account	24,110	
Works-in-Progress Account	15,650	
Finished Stock Ledger Control Account	10,850	
Works Oncost Suspense Account	4,408	
Office Oncost Suspense Account	2,006	
Rs.	57,024	57,024

RECONCILIATION STATEMENT

	Rs.	Rs.
Profit as per Financial Accounts		36,260
Add:	3,578	
Under-allocation of Works Expenses	4,408	
Works Oncost charged to Work-in-progress	2,006	
Office Oncost charged to Work-in-progress	8,770	
Financial Expenses not charged in Cost Accounts		18,762
		55,022
Less:		
Over-alloation of Office Expenses	985	
Over-alloation of Selling Expenses	2,258	
		3,243
Profit as per Cost Accounts		51,779

Notes :—

	Rs.
Works charged to Production	1,12,440
Less Wages included in Works-in-progress ..	5,510
Wages incurred on Finished Stock	1,06,930

Therefore Works Expenses are 80% of Rs. 1,06,930 = Rs. 85,544

Works Expenses relating to Work-in-Progress are 80% of wages included in Work-in-Progress $= 5{,}510 \times \frac{80}{100} =$ Rs. 4,408.

	Rs.
Prime Cost	3,19,500
Less Work-in-Progress	15,650
	3,03,850
Add Work Expenses	85,584
Works Cost	3,89,394

Therefore Office Expenses are 10% of Rs. 3,89,394 = Rs. 38,939.

Q. 319.

Give a Summary of Completed Jobs of a Contractor.

Answer :

SUMMARY OF COMPLETED JOBS

for the month of ....

Job No.	Date of comple-tion	Direct Material	Direct Wages	Material from Stores	Direct Charges	Works Overhead				Adminis-tration Overhead	Distribu-tion Overhead	Sales Overhead	Total
						Dept. 1	Dept. 2	Dept. 3	Dept. 4				
Total Rs.													

Certified by ....
Cost Accountant.

Countersigned by ....
Works Manager.

Q. 320.

Give a summarised Cost Sheet showing sectional and total costs of each separate lot of Cars turned out in an Automobile Manufacturing Works. Provide also for comparison of actual costs with estimates.

Answer:

15 Motor Vehicles	Actual Cost					Estimated Cost					Cost over the estimate	Cost below the estimate
	Material	Labour	Prime Cost	Oncost	Total Cost	Material	Labour	Prime Cost	Oncost	Total Cost		
(A) Chassis												
1. Chassis Frame												
2. Engine												
3. Front Axle												
4. Gear Box												
5. Rear Axle												
6. Steering Gear												
7. Change Speed Gear												
8. Brake Gear												
9. Radiator												
10. Dashboard												
11. Propeller Shaft												
12. Petrol Tank												
13. Bonnet												
14. Silencer												
Total Cost of Chassis												
(B) Body												
15. Body & Fittings												
16. Wings												
17. Tyres												
18. Lamps												
19. Outfit												
20. Painting												
21. Delivery												
Total Cost of Body												
Grand Total Cost												

Q. 321.

Give a Specimen of Operating Cost Sheet of an Electric Tramway Company.

Answer:

OPERATING COST SHEET OF AN ELECTRIC TRAMWAY COMPANY

Description of Expenses	Amount		Cost per Car mile				Cost per Passenger mile			
			This Month		Last Month		This Month		Last Month	
Power-Generation Expense:										
Wages & Salaries										
Fuel										
Oil, Waste & Supplies										
Maintenance & Repairs										
Buildings										
Plant										
Dynamos, etc.										
Accumulators										
Miscellaneous Charges										
Power Purchased (if any)										
Total Rs.										
Power-Distribution Expense:										
Wages & Salaries										
Stores consumed										
Maintenance & Repairs:										
Plant										
Cables										
Sundries										
Total Rs.										
Operating Expense:										
Salaries										
Wages:										
Inspectors										
Drivers										
Clerks, etc.										
Tract cleaning & supervision, etc.										
Uniforms										
Stores consumed										
Licence of cars										
Miscellaneous Charges										
Total Rs.										
Permanent Way:										
Wages & Salaries										
Repairs & Renewals										
Sundries										
Total Rs.										

OPERATING COST SHEET OF AN ELECTRIC TRAMWAY COMPANY (*Contd.*)

Description of Expenses	Amount		Cost per Car mile				Cost per Passenger mile			
			This Month		Last Month		This Month		Last Month	
Cars & Equipment:										
Wages ..										
Repairs & Renewals ..										
Miscellaneous ..										
Total Rs.										
General Establishment Expense:										
Depreciation ..										
Total Rs.										
Grand Total Rs.										

Q. 322.

Draft Forms of Daily and Trip Reports by the drivers of each vehicle and the monthly Running Costs Summary prepared therefrom, suitable for a Motor Transport Company owning a fleet of Motor Lorries.

Answer:

DAILY TRIP REPORT

Lorry No. Date ..
Route No. Time left Garage
Driver's Name Time returned Garage

Trip No.	Load collected from	Load delivered to	Tons or Packages delivered	Mileage
1 ..				
2 ..				
3 ..				
4 ..				
5 ..				

Report on delays:

Loading
Traffic
Break down
Accidents

Worker's Time:

Driver
Assistant
Mechanics
Cleaners

Garage Supplies:

Petrol
Oil
Grease
Tyres
Sundries

Driver's Signature. *Garage Manager's Signature.*

Note Details of Accidents or Repairs may be noted at the back of the Report

MONTHLY RUNNING COSTS SUMMARY

Lorries		Running Costs			Sundries			Mileage	Tons	Unit Costs		Mileage per Gallon
No.	Make	Petrol	Oil & Grease	Tyres	Driver's Wages		Total			Per Mile	Per Ton	

Note.—The running charges are exclusive of the Standing Charges. These latter include Insurance, Garage Rent, Depreciation, License Fees, etc. To ascertain the total Cost of running each Lorry per month, a fair proportion of monthly Standing Charges will also have to be added to its relative Running Costs.

Q. 323.

The Fancy Toys Co. are manufacturers of two types of toys, *x* and *y*. The manufacturing costs for the year ended 31st December 1956 were:

	Rs.
Direct Materials	2,00,000
Direct Wages	1,12,000
Production Overhead	48,000
Rs.	3,60,000

There was no work in progress at the beginning or at the end of the year.

It is ascertained that

(i) Direct materials in type *x*, cost twice as much as direct materials in type *y*.

(ii) The direct wages for type *y* were 60% of those for type *x*.

(iii) Production Overhead was 30 naye Paise, the same per toy of *x* and *y* types.

(iv) Administration Overhead for each grade was 200 per cent of direct labour.

(v) Selling Cost was 25 naye Paise per toy for each type of toy.

(vi) Production during the year was:
Type *x* — 40,000 toys of which 36,000 were sold
Type *y* — 1,20,000 toys of which 1,00,000 were sold

(vii) Selling prices were Rs. 7 per type *x* and Rs. 5 per toy for type *y*.

Prepare a statement showing the total cost per toy for each type of toy and the profit made on each type of toy.

Answer:

FANCY TOYS COMPANY

STATEMENT SHOWING COST PER TOY AND TOTAL COST YEAR ENDED 31st DECEMBER 1956

—	Type *x* Production 40,000 toys		Type *y* Production 1,20,000 toys	
	Per Toy	Total	Per Toy	Total
	Rs.	Rs.	Rs.	Rs.
Direct Materials	2.00	80,000	1.00	1,20,000
Direct Wages	1.00	40,000	0.60	72,000
Production Overhead	0.30	12,000	0.30	36,000
Administration Overhead	2.00	80,000	1.20	1,44,000
Selling Costs	0.25	10,000	0.25	30,000
Rs.	5.55	2,22,000	3.35	4,02,000

Total cost per toy:

Type x = Rs. 5·55
Type y = Rs. 3·35

STATEMENT OF PROFIT

—	Type x	Type y
	Rs.	Rs.
Sales:		
36,000 toys at Rs. 7 per toy	2,52,000	
1,00,000 toys at Rs. 5 per toy		5,00,000
Stock on hand—31-12-1956:		
4,000 toys at Rs. 5.55 per toy	22,200	
20,000 toys at Rs. 3.35 per toy		67,000
	2,74,200	5,67,000
Less: Total Cost	2,22,000	4,02,000
Net Profit Rs.	52,200	1,65,000

Q. 324.

In a brass foundry, where standard costing is in operation, the standard mixture consists of 70 per cent Copper and 30 per cent Zinc. Standard loss in costing is one per cent on output. The material consumed during a certain period was:

Copper	30,000 lbs.
Zinc	12,500 lbs.
Actual production amounted to	41,250 lbs.

You are required to submit a report on these facts.

Answer:

Comparison of the Standard Quantity of material with that actually used:

	Standard	Actual
Mixture	lbs. 42,500	lbs. 42,500
Copper 70 per cent ..	lbs. 29,750	lbs. 30,000
Zinc 30 per cent ..	lbs. 12,750	lbs. 12,500
Costing loss, 1 per cent on output	lbs. 412.50	lbs. 1,250
Production	lbs. 42,087.50	lbs. 41,250

The above figures clearly indicate that there is considerable variation from the standard in the material used and the production during the period.

Copper has been under-used by	250 lbs.
Zinc has been over-used by	250 lbs.
Costing loss has increased by	837·50 lbs.

The attention of the foundry foreman has been drawn to the seriousness of this fact, and his explanation has been called for. The evident error in the mixture actually used has resulted in faulty costing with a high percentage of rejects. In order to avoid recurrence of similar trouble, it is suggested that foundry figures of materials consumed must be constantly checked.

J. PINTO
Cost Accountant.

Q. 325.

An invoice received from "Steel Sheets Ltd." shows as under:

Mild Steel Sheets, supplied as under on a returnable skid:

	Tons.	Cwts.	Qrs.	Lbs.	
Gross weight	2	2	0	0	at Rs. 448 per ton = Rs. 940.80 nP.
Net	2	1	1	24	

Note: Wooden Skids are weighed with the sheets and the prices are charged accordingly. Credit for skid will be given on return at the rate of Rs. 224 per ton.

State what Costing problem would arise, and how you would deal with it.

Answer:

The price quoted as Rs. 448 per ton is not correct, as the net weight should be taken into consideration. As the returnable wooden skid will be credited to the account, the ultimate value of the invoice will be reduced. On examining the facts the position would appear to be as under:

		Tons.	Cwts.	Qrs.	Lbs.
Gross weight	..	2	2	0	0
Less : Net weight	..	2	1	1	24
Weight of wooden skid	..	0	0	2	4

The weight of wooden skid is thus 60 lbs.

The wooden skid, when returned will be credited at the rate of Rs. 224 per ton. The amended invoice will then read as follows:

Tons.	Cwts.	Qrs.	Lbs.		Rs. nP.
2	1	1	24	.. .. ..	940.80
Less: value of 60 lbs. of wooden skid at Rs. 224 per ton					6.00
				Rs.	934.80

The Storekeeper would be instructed to take into stock, the net weight of the mild steel sheets and value them at Rs. 934.80 per ton. Care must be taken to see that proper credit is received on return of the wooden skid.

Q. 326.

The following is a summary of the entries in the Contract Ledger as at 31st December 1956 in respect of Contract No. 174:

	Rs.
Materials (direct)	21,000
Materials (from Stores)	4,550
Wages	12,047
Direct expenses	4,697
Establishment charges	5,600
Plant	23,940
Sale of scrap	1,274
Sub-contract Costs	5,047

You obtain the following further information:

(1) Expenses outstanding and not brought into account were wages Rs. 560 and other sundries Rs. 784;

(2) Depreciation of Plant upto 31st December is Rs. 5,985;

(3) Included in the summary of entries are wages Rs. 700, other expenses Rs. 1,050 incurred since certification. The value of material used since last certificate is Rs. 1,456;

(4) Material on site at 31st December 1956 are valued at Rs. 7,000;

(5) Rs. 43,750 had been certified upto 20th December 1956, when three-eighths of the Contract remained uncompleted;

(6) The total contract price is Rs 70,000. You are required to show what profit or loss should be taken into accounts for the period ended 31st December 1956 in respect of Contract No. 174.

Answer:

CONTRACT ACCOUNT NO. 174

		Rs.			Rs.
To Materials (direct) ..		21,000	By Sale of scrap ..		1,274
,, Materials (from Stores) ..		4,550	,, Work certified ..		43,750
,, Wages ..		12,047	,, Work-in-progress c/d.:	Rs.	
,, Direct Expenses ..		4,697	Wages ..	700	
,, Establishment Charges ..		5,600	Expenses ..	1,050	
,, Plant ..		23,940	Materials ..	1,456	
,, Sub-contract Costs ..		5,047			3,206
			,, Plant c/d. ..		17,955
		76,881	,, Materials on site c/d. ..		7,000
,, Balance carried down:—					
Outstanding Charges:	Rs.				73,185
Wages outstanding	560		,, Profit and Loss Account:		
Expenses outstanding	784		Loss to date ..		5,040
		1,344			
	Rs.	78,225		Rs.	78,225

Note: If a further loss is estimated to arise before the Contract is completed, it would be advisable to provide therefor.

Q. 327.

The Eros Engineering Ltd. carry on an engineering business having thre departments.

The budgeted expenses for the ensuing year are:

—	Department 1	Department 2	Department 3
	Rs.	Rs.	Rs.
Materials	50,000	50,000	39,850
Direct Wages	68,320	43,920	39,650
Direct Expenses	880	1,140	450
Works Expenses	48,800	32,940	30,550
Administration Expenses	13,440	12,800	9,945
Direct Labour Hours	3,90,400	2,92,800	2,44,000

Works expenses are charged to output at a man-hour rate and admini tration expenses as a percentage on works cost.

What price should be charged for a job to include a profit of 7½% o cost, on which the direct costs are as follows?

	Dept. 1 Rs.	Dept. 2 Rs.	Dept. 3 Rs.
Materials	2,100	1,500	1,200
Direct Wages	2,250	1,750	1,675
Direct Expenses	50	..	..
Direct Labour Hours	12,000	10,800	10,000

Answer:

THE EROS ENGINEERING LIMITED

COMPUTATION OF SALE PRICE FOR JOB 109

	Dept. 1	Rs.	Dept. 2	Rs.	Dept. 3	Rs
Materials		2,100		1,500		1,20
Direct Wages		2,250		1,750		1,6
Direct Expenses		50		..		.
Works Oncost	(Rs. 12,000 @ 12½ nP.)	1,500	(Rs. 10,800 @ 11¼ nP.)	1,215	(Rs. 10,000 @ 12½ nP.)	1,2
Works Cost		5,900		4,465		4,12
Administration Oncost	(8% of 5,900)	472	(10% of 4,465)	447	(9% of 4,125)	3
Rs.		6,372		4,912		4,
				15,780		
Profit: 7½% of Rs. 15,780				1,183		
Sale Price Rs.				16,963		

WORKINGS

—	Department		
	1	2	3
Work Oncost (Computation of man-hour rate):			
(*a*) Works Expense ..	Rs. 48,800	Rs. 32,940	Rs. 30,550
(*b*) Direct Labour hours ..	3,90,400 hrs.	2,92,800 hrs.	2,44,000 hrs.
(*c*) Man-hour rate ..	12½ nP.	11¼ nP.	12½ nP.
Administration Oncost (Computation of percentage of works cost):	Rs.	Rs.	Rs.
Materials ..	50,000	50,000	39,850
Direct Wages ..	68,320	43,920	39,650
Direct Expenses ..	880	1,140	450
Works Expenses ..	48,800	32,940	30,550
Works Cost Rs.	1,68,000	1,28,000	1,10,500
Administration Expenses ..	13,440	12,800	9,945
Administration Oncost charge ..	8%	10%	9%

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